MTC GOODS MOVEMENT STUDY
PHASE 2

TASK 11 WORKING PAPER

A LAND USE STRATEGY TO SUPPORT REGIONAL GOODS MOVEMENT IN THE BAY AREA

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Prepared for

METROPOLITAN TRANSPORTATION COMMISSION

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A LAND USE STRATEGY TO SUPPORT REGIONAL GOODS MOVEMENT IN THE BAY AREA

This working paper presents the results of Task 11, Land Use Strategy Development, for the *San Francisco Bay Area Regional Goods Movement Study, Phase 2.* The purpose of this task is to identify land use strategies that could be implemented to provide and preserve affordable location options for goods movement land uses in the Bay Area. This task follows from the analysis done in Phase 1 and summarized in the Task 4 Report addressing "Existing Conditions and Trends Regarding Real Estate, Land Use, and Community Factors with Implications for Goods Movement Industries" (October 2003).

The paper begins by summarizing the land use issues and challenges and identifying the rationale and objectives for a land use strategy supporting regional goods movement in the Bay Area. It then provides an overview of the components of a comprehensive land use strategy that could be implemented. The overview identifies roles and responsibilities for implementation, highlighting the need for leadership and participation of multiple stakeholders from throughout the region. Together, the first three sections (Sections I-III) describe what a regional goods movement land use strategy could achieve and the scope of a comprehensive effort.

Subsequent sections then address each component of the land use strategy in more detail, describing policies, programs, implementation tools, and other actions and providing examples from experience in the Bay Area and other parts of the country. The detailed sections also identify the level of government or the private sector interests of relevance as appropriate. These four sections (Sections IV-VII) provide the details for how a regional goods movement land use strategy could be implemented. Then, Section VIII identifies the next steps that could be undertaken by MTC and its partners in the near future to articulate regional goods movement land use objectives and begin implementation of a regional goods movement land use strategy.

Undertaking a regional goods movement land use strategy is by its nature multi-dimensional and complex. The strategy described herein is comprehensive, identifying components involving regional planning priorities, local land use controls, economic incentives, financial assistance, environmental issues, institution building, and education. Participation and support would be required by local and regional governments and private sector interests. The paper addresses what could be done, identifying numerous policies, programs, tools, and actions. Some would be new and others represent re-packaging or targeting of existing programs and tools. Decisions would be needed as to how comprehensive to be in implementing some or all of the options described.

Operational Issues and Strategies

Parallel with the land use and regulatory approach, in order to mitigate conflicts between goods movement related business operations and other land uses, certain operational issues and

strategies for mitigation are addressed in this paper. Section IX addresses operational issues and strategies that affect the costs and efficiencies of goods movement businesses and trucking operators in the Bay Area. The issues addressed include those that arise from local regulations and restrictions affecting trucking operations as well as others that arise from growth and more intensive development in the region, particularly in central locations and near industrial areas. This section offers solutions based upon examples from national experience and available literature.

I. LAND USE ISSUES AND CHALLENGES

The Phase 1 analysis showed that goods movement industries and industrial businesses that rely on goods movement play an important role in the Bay Area's economy. Development trends and regional growth forecasts indicate increased demand in the Bay Area for goods movement services concurrent with a reduction in affordable, close-in location options for goods movement businesses. Regional Smart Growth policies would intensify development pressures on goods movement industries. These forces are affecting the efficiency of the freight transportation system in the Bay Area and raising important economic, transportation, and land use policy issues.

The outline below highlights key land use policy issues and challenges that affect goods movement activities in the Bay Area.

Trends

- Land use and real estate market trends in the Bay Area are:
  - Reducing the supply of affordable space for the location and expansion of goods movement businesses in the closer-in, central bayside parts of the region, while the demand for goods movement services continues to grow in these central areas, given their:
    - access to the region's airports and seaports; and
    - proximity to growing consumer markets of businesses and households.
  - Encouraging the growth and relocation of goods movement businesses to outlying areas, with more affordable location options and fewer land use conflicts.
- Growth forecasts show continuing trends toward intensification of residential and commercial development in the central bayside areas competing for land currently in warehouse and distribution and other industrial uses.
- Regional land use policy embodied in the Smart Growth Vision for the region is seeking a more compact pattern of regional development with more growth in the central parts of the region, thereby intensifying trends and creating even greater challenges for goods movement and goods movement businesses.

Problems

These trends pose a number of potential problems for the region, including those associated with:

- Increased land use conflicts.
- More truck miles on the regional roadway system.
- Longer truck travel times and higher costs of goods distribution.
- Greater truck emissions.
- Fewer business and employment opportunities in goods movement industries in the central parts of the region within proximity of the region's cities and urban workforce.

Challenges and Barriers to Overcome

- Regional benefits in favor of goods movement are diffused and somewhat hidden; they are not so evident at the local level where land use decisions are made.
  - The benefits of the goods movement industry accrue broadly to businesses and consumers throughout the region.
  - The role of goods movement in supporting the regional economy is one of a "behind-the-scenes", silent partner providing support to other sectors.
- Incentives at the local level are in favor of more intensive, higher-value land uses over goods movement uses. Thus, it is difficult to institute changes within existing market and institutional contexts.
  - There are strong incentives locally in favor of development of more intensive, higher-value uses where market support exists, including property value benefits to owners and developers, fiscal revenue benefits for local governments, and community benefits from improved image, reduced off-site impacts, and greater availability of goods and services locally.
  - In comparison to these local benefits, the regional benefits of the goods movement industry are less immediate and more limited at the local community level in most cases.
  - California's local government finance system encourages localities to seek land uses with the greatest fiscal benefits, such as sales tax-generating commercial uses and higher-valued, higher-density uses than those involved in goods movement.

- Constituencies in favor of the goods movement industry are lacking at both the local and regional levels.

  - The broader regional nature of the benefits of the goods movement industry make it difficult to build local constituencies to advocate for preservation of industrial areas and land uses.

  - By contrast, the immediacy of the benefits of hew, higher-value development/reuse for property owners and developers, local governments, and community residents provide stronger incentives for action and advocacy in local land use decision-making.

  - There also can be local opposition to goods movement uses because of concerns about potential off-site impacts for noise, safety, air quality, visual quality, and road maintenance/repair needs.

  - There is a lack of awareness of the role of goods movement industries in the regional economy and of the land use issues affecting the goods movement industry, both now and in the future.

- A comprehensive land use planning framework for goods movement is lacking in the Bay Area.

  - The cumulative effects of individualized local land use decisions determine the regional locational options for goods movement industries by default. A regional land use strategy for goods movement activities has not been developed; local land use decision-making does not take regional impacts into account. In addition to land use decisions that directly affect locations for good movement businesses, decisions affecting activity in nearby areas can affect land values and contribute to land use conflicts, adversely affecting the viability of goods movement activities in that area in the future.

  - The regional Smart Growth Strategy has not focused on commercial/industrial land uses or on goods movement. It emphasizes residential development with the goals of increasing the amount of housing built, expanding affordable housing opportunities, and fostering a more compact development pattern with jobs/housing, transportation, open space, and environmental benefits. Increasing residential development on infill locations in the central parts of the region as envisioned will require substantially more reuse and redevelopment of lands currently or formerly in industrial, transportation, or commercial uses. While substantially greater redevelopment pressures are anticipated in the major central market areas for Bay Area warehouse and manufacturing space, there has been no focused evaluation of the implications of the proposed regional Smart Growth Vision on the goods movement industry.

  - Regional planning for the seaports, airports, and regional highway network focus on the transportation facilities themselves, and not on the supply of land and the overall land use pattern needed to support the efficient use of these facilities, particularly in the future, as the region grows and intensifies around them.

- Land use strategy development to address regional goods movement issues and challenges in the Bay Area requires a relatively unique regional approach. Industrial protection strategies throughout the country have typically been done by individual, major cities (such as Boston, New York, Chicago, etc.). The need for a regional approach covering many cities, including the three major cities in the Bay Area, is relatively unique. It requires developing a regional strategy along with incentives for communities to implement the strategy at the city/local level.

II. RATIONALE AND OBJECTIVES FOR A LAND USE STRATEGY TO SUPPORT REGIONAL GOODS MOVEMENT

Land use strategies to support efficient goods movement in the Bay Area focus on the availability of land and locations for warehouse, distribution, and other industrial space for freight-oriented businesses and services supporting the region's economy and population. One focus of such land use strategies would be to provide and retain location options for goods movement industries in the central, bayside parts of the Bay Area in the future. Land is needed in the central areas to facilitate goods movement through the region's international gateways at the airports and seaports and along its major transportation corridors. There also is a role for land use strategies and planning for development of major new industrial areas for goods movement uses in more outlying parts of the region and beyond to facilitate efficient goods movement on the inter-regional transportation corridors linking the Bay Area with the Central Valley and the rest of the state and nation.

Rationale for a Land Use Strategy to Support Regional Goods Movement

The use of land along the major transportation corridors of the region and in areas surrounding the major airports and seaports has long-term implications for the efficiency of the freight transportation and distribution systems for goods movement in the Bay Area. It also has associated economic, congestion, and environmental implications, as well as implications for the diversity of business activity and employment in the central parts of the region.

Land Supply is a Valuable Regional Resource Supporting Efficient Freight Transportation and Regional Economic Growth

The supply of land in the existing industrial areas along the major transportation corridors of the region and in areas surrounding the major airports and seaports represents a unique and valuable asset to the region and its economy. The use of that land and its availability to support freight transportation in the region will have long-term implications for the efficiency of the freight transportation system. Decisions in favor of the redevelopment/reuse of that land for other uses will result in the *permanent loss* of these locations for goods movement businesses and other industrial uses that support the region's economy and international, national, and regional trade. Thus, it is important that land use be included as a component of an overall regional goods movement strategy for the Bay Area, and that regional planning for the airports, seaports, and regional highway network include consideration of the supply of land and overall regional land use pattern needed to support the efficient use of these major transportation facilities. To do otherwise could be costly from economic, transportation, and even environmental perspectives.

The Evolution of Distribution, Logistics, and Goods Movement Adds Importance to the Efficiency of the Region's Freight Transportation System

Historically, industrial land uses were concentrated in manufacturing centers and often devoted to production and storage functions. Today, industrial space is concentrated in distribution markets, primarily in large regions and cities near multiple modes of transportation (land, air, water, and rail). Speed and efficiency in the movement of goods have become critical today, given the use of just-in-time supply/inventory systems, the shift in manufacturing to high-value products, the importance of express deliveries, and the growing use of e-commerce. Globalization also has influenced goods movement, increasing the importance of international trade through the major airports and seaports. Today, more than ever, the efficiency of the freight transportation system for goods movement effects the competitiveness of the region. As described above, land supply and land use policy play a role in supporting efficient goods movement.

Goods Movement Industry Location Trends Support Continued Demand for Central Locations Although Such Uses Are Increasingly Unable to Compete for Those Sites

Location trends within the goods movement industry today are of two types. Large warehouses and distribution facilities of major retailers and other large-scale distributors are continuing to move outward to exurban areas on the fringes of large metropolitan regions. The amount of land needed for these large-scale facilities will continue to limit them to locations where large sites are available and land is much less costly than in central areas. At the same time, the importance of locating near critical transportation nodes and corridors will retain and draw more specialized distribution facilities and cargo-handling services to infill sites near airports, seaports, and the major freeway routes with access to business and population centers. Companies shipping high-value items and those handling time-sensitive deliveries will continue to seek central locations.

Over time, the continuing demand for central locations for goods movement activities will result in more intensive use of available industrial sites and willingness by freight-oriented businesses to pay somewhat more for the advantages of being close to the major airports and seaports and business and household markets. However, the low densities of goods movement uses will continue to support low rents and low land values relative to more intensive and higher-density commercial and residential development competing for prime, infill locations. As a result, development pressures for land use transition in industrial areas will continue. In the absence of the type of industrial protection strategy outlined in this paper, the location options for goods movement activities in central areas will be reduced substantially. The intent of the land use strategies described herein is to intervene and retain options for goods movement uses in key locations that are of most benefit to the region's freight transportation system. Even with such strategies, it is still anticipated that land area devoted to goods movement uses in the inner Bay Area will decline over time.

Limited Availability of Affordable, Central Locations for Goods Movement Uses Results in More Truck Miles on Regional Roadways and Other Implications

The continuing demand for central locations for goods movement activities in the Bay Area partly results because trucking and distribution involves multiple points of consumption being served by multiple points of supply. In this context, economics favors locations for many goods movement uses that are close to the centers of regional business activity and population (so as to provide goods movement with the fewest miles and in the shortest time). However, as land use and real estate market trends reduce the availability of affordable locations in central areas, trucking and distribution facilities end up locating further out, some distance from more efficient locations. As this continues to occur, there are a number of potential problems for the region that provide rationale for a regional goods movement land use strategy. The problems include those associated with more truck miles on the regional roadway system, increased congestion and added risks to safety, longer truck travel times and higher costs of goods distribution, and increased truck emissions.

Objectives of Regional Land Use Strategies Supporting Goods Movement

To understand the scope of a goods movement land use strategy for the Bay Area, it is useful to focus on the three major elements of the freight transportation system serving the region and points beyond. The three elements are:

- the international gateways of the region, including the airports and seaports;
- the major transportation corridors within the Bay Area and, in particular, the multi-purpose I-880 corridor; and
- the inter-regional gateway corridors connecting the Bay Area with the rest of the state and nation.

As part of the broader goods movement strategy for the region, the land use component would be developed to provide support for efficient goods movement in the context of the above three elements of the freight transportation system.

Because of differences in land use conditions and trends in areas surrounding each element of the freight transportation system, as well as jurisdiction and governance issues and freight operations issues, there are specific objectives for land use strategies in each case. These specific objectives are described below and summarized in Figure 1 on the next page.

FIGURE 1
OBJECTIVES FOR LAND USE STRATEGIES
SUPPORTING REGIONAL GOODS MOVEMENT

- **Support the Region's International Gateway Facilities**
  - Provide and retain locations for goods movement land uses on and around the major airports and seaports to insure that the region's international gateway facilities remain functional and economically viable.
- **Support the Major Transportation Corridors within the Bay Area**
  - Provide and retain central area locations for goods movement land uses in proximity to the major transportation corridors that link those uses to the business and population centers that they serve.
  - Focus on I-880 as a major multi-purpose goods movement corridor in the Bay Area, and U.S. 101 as a second major corridor.
- **Support the Inter-regional Gateway Corridors**
  - Concentrate large-scale, freight-intensive land uses in outlying locations with good transportation access; provide land use policies and supporting infrastructure to facilitate such development.
  - Coordinate land use planning with transportation planning for new inter-regional routes in the future.
  - Consider retaining locations for goods movement uses and truck-support services along existing inter-regional corridors where intensification of development is occurring or anticipated in the future.

- **Land Use Objectives in Support of International Gateway Facilities at the Region's Major Airports and Seaports.**

Land is needed to support goods movement through the international gateway facilities at the region's major airports and seaports. Both within the airport and seaport facilities themselves and in nearby areas, land is needed to support the significant growth of air cargo and waterborne cargo that is forecast for the region in the future. Under current trends, locations surrounding the major airports and seaports in the central, bayside parts of the region will continue to become more desirable for higher-value uses, at the same time that demand and need for such locations in support of goods movement will increase. The lack of nearby land to

support the international gateways could affect the ability of those facilities to remain functional and economically viable in the future.

- **Airports.** Major constraints to the expansion of air cargo activities could arise from a lack of off-field support facilities and on-airport land for expanding existing air cargo operations. Speed and efficiency in air cargo operations are particularly important to the region, given the importance of high-value goods production and distribution in the Bay Area and the continuing growth of express air services and deliveries. Since most air cargo is time-sensitive and cost-sensitive (extra handlings add cost and time), land is needed on airport property and in close proximity to the airports.

  Land supply constraints and uncertainties about the continuing availability of land for support facilities nearby are most notable at and around San Francisco International Airport (SFO). The lack of off-airport land for expanding existing facilities and adding new facilities are constraints for expanding air cargo activities. Much of the air cargo sorting and handling operations occur off the airport property in nearby South San Francisco/San Bruno industrial areas, and there are constraints on expansion there. Over time, those existing industrial areas will continue to become more desirable for other uses, while the transition to biotechnology and other higher-value uses are desired by the nearby communities.

  Concerns also exist about air cargo-related land uses on and around Oakland International Airport (OAK) in the future. OAK could expand its on-airport ancillary facilities with the addition of new access roads and the development of more domestic air cargo facilities. However, there are questions about the longer-term availability of sites/locations for expansion of air cargo operations off-site, in the vicinity of the airport facilities.

- **Seaports.** Land supply to support seaport operations and waterborne cargo growth is already an issue, particularly for support facilities at the Port of Oakland. Real estate market pressures are supporting higher-value uses and land use policies are making it difficult for port-related businesses to remain in proximity to the Port. Further, port-support uses currently on port property or leasing space at the nearby Oakland Army Base will need to seek other locations in the future as Port land is developed for additional terminals and parts of the former Army Base are redeveloped for other uses. Over time, land supply could become an increasing constraint on efficient Port operations and maritime cargo

growth, particularly as core services that require proximity to port terminals are unable to find locations nearby.[1]

The overall objective for a land use strategy supporting the region's international gateway facilities would be to provide and retain locations for cargo-related land uses in and around the major airports and seaports in the Bay Area. Achievement of that objective would preserve the availability of land for facilities and businesses needed to accommodate growth of air and water cargoes and insure that the region's gateway facilities remain functional and economically viable in the future. Land use strategies would focus on identifying and designating important locations for nearby support facilities and uses, and developing incentives and other strategies for retaining those locations for such uses in the future. Potentially, goods movement land use strategies supporting the region's airports and seaports could become part of existing regional plans and planning efforts for these gateway transportation facilities. There would likely be regional, state, and national benefits from preserving locations to support the international gateways.

- **Land Use Objectives in Support of the Major Transportation Corridors within the Bay Area and, in Particular, the I-880 and U.S. 101 Corridors.**

Land is needed along the major transportation corridors of the Bay Area to provide locations for goods movement services supporting the region's economy and population. The demand for goods movement services will increase as the region grows. Under current trends, growth and intensification of business activities and population in the region will support growth in the demand for goods movement services while also increasing the competition for land, particularly along the major corridors in central, bayside parts of the region. As a result, it will be more difficult and more costly for goods movement businesses to locate and remain in areas along the major transportation corridors in proximity to the growing markets they serve. As freight-oriented uses are forced to seek outlying locations, truck miles traveled will increase along with the costs of goods movement distribution.

I-880 is a major multi-purpose goods movement corridor in the Bay Area. It is used by motor carriers to link with the rail terminals in Richmond and Oakland, with air cargo facilities at OAK, and with ocean freight at the Port of Oakland. I-880 is used by shippers located in the Bay Area both to connect with these multiple modes, and to deliver goods to destinations within the region. U.S. 101 is a second major intra-regional corridor, that links with SFO and the two largest

[1] The *Port Services Location Study* (June 2001 by The Tioga Group and associated consultants) defines "core" services as uses that require close proximity to port terminals for operational or economic reasons, and whose location elsewhere may increase truck travel or exacerbate other problems. The principal core services identified include: port-based centrally located drayage; frequently used truck services (short-term parking, fuel, tires, and scales); the service-oriented portion of refrigerated container depots; and transloaders and consolidators handling heavy cargo.

cities in the region, San Francisco and San José. I-80 and I-680 play secondary roles as intra-regional corridors for goods movement.

Due to its location at the center of the region, the **I-880 corridor** will continue to be a key freight transportation route, at the same time that its desirability as a location of business park, office, retail, and residential uses will increase as development further intensifies in the central parts of the region. Currently, the major concentrations of warehouse and industrial space along the I-880 corridor exist in Oakland, San Leandro, and Hayward, followed by concentrations to the south in Union City, Newark, Fremont, Milpitas, and San José, and to the north in Richmond.

The **U.S. 101 corridor** also will continue to be an important freight transportation route. Overall, the land use pattern of this corridor is much less industrial than I-880, although important concentrations of warehouse, industrial, and other uses supporting freight transportation exist in San Francisco, in northern San Mateo County and particularly in the South San Francisco/San Bruno areas, and in Sunnyvale, Santa Clara, and San José at the southern end. Over time, trends will continue to support the conversion of industrial land/space in these areas to higher-value uses, while the demand and need for goods movement warehouse and distribution facilities will increase in the corridor.

The overall objective for a land use strategy focused on the major transportation corridors would be to provide and retain locations for goods movement land uses in proximity to the major corridors that link those uses to the business and population centers that they serve. Preserving locations for goods movement land uses would result in a more balanced mix of uses in central, bayside areas of the region. Land use strategies for these corridors would include designating key locations for freight-oriented industrial uses, including warehouses and distribution facilities as well as trucking support service facilities. Supportive land use policies would focus truck-oriented uses along the freeway routes and away from nearby neighborhoods. They would include financial incentives and other strategies for retaining affordable location options for goods movement uses in the future.

- **Land Use Planning in Support of an Inter-regional Gateway Strategy**

The inter-regional transportation corridors provide a critical trade link between the Bay Area and the rest of the state and nation. The I-80 corridor through Solano County provides connections north to the Sacramento region and points further north and east, while the I-580 corridor connects the Bay Area with I-5 and provides access to the Central Valley, southern California, and points further south and east. Increasingly, the inter-regional corridors, and I-580 in particular, provide connections between the nine-county Bay Area and the growing distribution and warehouse centers serving the Bay Area from the nearby San Joaquin Valley.

In the future, goods movement over these inter-regional corridors will increase. Connections via I-580 to the east will become increasingly important as the region continues to expand outward and large-scale distribution facilities serving the Bay Area continue to expand in San Joaquin Valley locations with large land areas and access to I-5. Consideration also will be given to transportation improvements that could provide additional routes inland such as SR 152 as a potential reliever route for I-580 that would connect southern Santa Clara County with Stanislaus County and San Benito County. Other possibilities include improvements to SR 4 and SR 84 to provide better connections between eastern Contra Costa County and San Joaquin County and I-5. In addition, alternative mode improvements will be considered, such as CIRIS, to provide shippers with a rail alternative to divert some of the freight traffic from the interstates. The planning for these new inter-regional connections presents an opportunity to address the land use needs and development potentials for new freight-oriented industrial areas in support of the new transportation facilities and routes.

Thus, there is a role for land use planning as part of a broader inter-regional gateway strategy for goods movement. The intent would be to focus on land use strategies and planning for expansion of existing warehouse and distribution centers and for development of major new freight-oriented industrial areas for goods movement uses in outlying parts of the Bay Area and beyond. The idea would be to seek to concentrate freight-intensive land uses in locations with good transportation access and to provide land use policies and supporting infrastructure that would facilitate the development of such uses in these locations. The intent is similar to that of the concept of freight villages, an approach to freight land uses that has been used in European countries and aspects of which have been developed in the U.S. Land use planning in coordination with transportation system planning could result in a more efficient inter-regional freight transportation system in the future, with fewer land use conflicts and environmental impacts.

In addition to the focus on new development in peripheral areas, there also could be the need for strategies to retain locations for goods movement uses along existing inter-regional corridors where the intensification of development is anticipated to continue in the vicinity. Examples include portions of I-80 in Solano County where commercial uses, in particular, are developing in areas along the freeway and replacing former freight-oriented industrial uses and truck support services.

Of the three contexts for land use strategies in support of regional goods movement, the first two described above, related to international gateways and the major freight-oriented regional transportation corridors, identify the need for strategies focused on the ***retention*** of industrial land uses in the central, bayside parts of the region. In both cases, the intent is to provide and retain location options for freight-oriented land uses in the future. The strategies would be focused on freight-oriented industrial land use retention and preservation. The third context for

land use strategy development, related to the inter-regional gateways, differs from the other two as it focuses primarily on land use strategies and planning for development of major *new* industrial areas for goods movement uses in more outlying locations including jurisdictions in adjacent regions. This latter approach is more typical of existing land use planning approaches, although there are differences due to the inter-regional approach desired here and the focus on support for goods movement and the freight transportation system. Because there is much less need to intervene and attempt to influence market trends, however, the latter approach will be easier to implement. Thus, because of these differences, more of the material in the rest of this paper addressing the components of land use strategies and aspects of implementation, focuses on the industrial protection strategies identified under the first two contexts described above.

Other Considerations and Implications

Focus on Land For Goods Movement is Not Intended as a Zero Sum Game; The Challenge is to Consider How Best to Meet the Needs of All Sectors and Land Uses

Focus on land use strategies for goods movement businesses and services in coordination with regional transportation planning for goods movement is not intended as a zero sum game where the use of land for one sector is tied to the demise of other sectors. In a region with the size and diversity of the Bay Area, there are options for all uses. Part of the challenge of land use planning is to consider how to best meet the needs of all sectors and land uses.

- Industrial land uses involved in goods movement occupy a relatively small share of the land in the developed parts of the region. That share has been declining in the central parts of the region, to make way for commercial, residential, and R&D/business park land uses. The intent of the land use strategies described herein is to seek to retain options for goods movement uses in locations that are of benefit to the regional freight transportation system. Even with such a strategy, it is still likely that land area devoted to goods movement uses in the inner Bay Area will decline over time.

- Regional land use planning in the Bay Area is focused on the regional Smart Growth Strategy. The Smart Growth Strategy currently emphasizes residential development with the goals of increasing the amount of housing built, expanding affordable housing opportunities, and fostering a more compact development pattern with jobs/housing, transportation, open space, and environmental benefits. While business activity will benefit from an expanded workforce in closer proximity to places of work, implementation of the regional Smart Growth Strategy will also increase and accelerate trends in favor of reuse and redevelopment in the central parts of the region, making it increasingly more difficult and more costly for goods movement businesses to remain in the central areas. Those effects also will have implications that are contrary to the objectives of smart growth, including more dispersed industrial land use patterns, less efficient and more costly freight transportation services, greater truck miles traveled, and potentially greater air emissions. However, there has been no

focused evaluation of the implications of the Smart Growth Vision for the goods movement industry or of the trade-offs involved in pursuing the smart growth strategy as currently envisioned.

- The recommendation here is that regional land use policy be broadened to incorporate regional goods movement and the associated needs of freight-oriented land uses. The intent is to broaden the vision so as to reduce potentially adverse implications for regional goods movement, expand the coordination of land use and transportation planning, and increase the overall benefits of smart growth for the region's economy and environment.

Preserving Location Options for Goods Movement Land Uses Also Would Contribute to Maintaining a Diversity of Business Activities and Jobs in the Central Parts of the Region

Preserving location options for goods movement industries in the central parts of the region would contribute to maintaining a socially and economically diverse mix of business activities and land uses in these areas. It also would preserve employment opportunities that provide good pay and accessibility for modestly-skilled and -educated workers residing in the cities and urban core areas of the region. While not the primary objectives of the industrial protection strategies proposed, employment and economic development are important issues in communities that would be affected. They also are important considerations for the regional business and economic development organizations that are concerned about regional goods movement.

III. OVERVIEW OF MAJOR COMPONENTS OF A COMPREHENSIVE LAND USE STRATEGY

The overarching goal of a comprehensive regional goods movement land use strategy would be to provide and preserve affordable location options for goods movement businesses thereby supporting efficient freight transportation in the Bay Area. A comprehensive land use strategy would have four key components that, in combination, would address regional planning priorities, local land use controls, economic incentives, financial assistance, environmental issues, institution-building, and education. The four key components are as follows:

- Land use and regulatory policy
- Financial incentives and assistance and other funding approaches
- Addressing off-site impacts and the physical environment
- Leadership, institutional partnerships, and education/advocacy

A successful regional goods movement land use strategy would be grounded in an understanding of both regional and local benefits and costs. Policy development would start at the regional level, identifying regional benefits and the best locations for goods movement businesses from a regional perspective. Then regional entities would provide direction and offer incentives to encourage local communities to use local land use and zoning policy to preserve those locations. Economic incentives and financial and technical assistance to local jurisdictions, property owners, and businesses would most likely be required. Proactive steps to minimize off-site community impacts and improve physical conditions in industrial areas would also be important to enhance the acceptance of goods movement land uses in local communities. Finally, regional leadership would be needed to advocate for the goods movement industry, educating decision-makers and the public.

For each of the four components, there are a number of policies, programs, implementation tools, and actions that could be undertaken. These policies, programs, and actions include elements applicable to the public sector at both local and regional levels and other elements applicable to private sector players.

This section of the paper outlines the four components of a comprehensive regional goods movement land use strategy. Subsequent sections address each in more detail, describing specific policies, programs, and implementation tools and providing examples from experience in the Bay Area and other parts of the country. In many cases, the policies, programs, and tools discussed are not new, but represent a re-packaging or targeting of existing land use and economic development tools and programs to focus on the objectives of a goods movement land use strategy. The detailed sections also identify the level of government or the private sector interests of relevance as appropriate.

The success of a regional goods movement land use strategy would depend on the support of multiple stakeholders, policy-makers, and committed leadership from throughout the region. Obstacles include strong local incentives for higher-value uses, scarce public and private financial resources, and numerous competing regional policy questions. Therefore, implementing a comprehensive land use strategy of this magnitude would require time to build interest and commitment. Decisions would be required as to how comprehensive to be in implementing some or all of the policies, programs, and other tools described in this paper. Nevertheless, the more comprehensive the effort, the better the outcome.

Overview of a Comprehensive Regional Goods Movement Land Use Strategy

The following outline presents policies, programs, and actions that could be undertaken under each of the four components of a comprehensive land use strategy in support of efficient regional goods movement. Each component is described in more detail in subsequent sections of this paper.

- **Land Use and Regulatory Policy** (see Section IV)

  This component would involve identification of the best locations for goods movement land uses in support of efficient freight transportation in the region, and use of regulatory land use policies to designate and attempt to retain those locations in freight-oriented industrial use. Specific aspects of this component include the following:

  - Identification of **key locations for goods movement** businesses and services, based on regional benefits for freight transportation and good potentials for longer-term viability in industrial use.

    - Deliberate process to identify key locations
    - Use of criteria focused on location, access, and use characteristics
    - Key locations in central areas in support of international gateways and major goods movement corridors
    - Outlying locations in support of inter-regional gateways

  - Use of **local land use policies and zoning** controls to designate and protect key locations for goods movement uses.

    - Narrow list of permitted uses
    - Development controls to support low-density, freight-oriented industrial uses
    - Performance standards and site design controls
    - Incentives for local communities to adopt industrial protection policies
    - Model land use policies and technical assistance

  - **Regional plans and regulatory strategies** to articulate goods movement land use objectives and help integrate land use and transportation planning.

- Regional airport and seaport plans
- Regional Transportation Plan and transportation corridor plans
- Inter-regional Partnership

♦ **Financial Incentives and Assistance, Land Acquisition/Ownership/Development, and Other Funding Approaches** (see Section V)

Implementation of a successful regional land use strategy is also anticipated to require economic incentives, financial assistance, and innovative funding approaches of the types identified below. Incentives would encourage and reward local communities for implementing land use policies that provide benefits for regional goods movement. Public investments in freight-oriented industrial districts also could enhance the longer-term viability of goods movement uses there. Successful implementation is likely to require land acquisition/ownership approaches beyond regulatory land use policy so as to retain affordable location options for goods movement uses over the longer term. There also is a role for financial and technical assistance for goods movement businesses to facilitate their relocation to and retention and expansion in central areas.

– **Incentives to encourage and reward local communities** for implementing freight-oriented industrial land use policies and controls.

  - Grants for planning and smaller-scale improvements
  - Funding for road maintenance and other local costs
  - Funding for local industrial district support
  - Fiscal incentives
  - Credits toward other regional objectives/obligations

– **Priority funding** and financial assistance in freight-oriented industrial districts in support of property owners, businesses, and local communities.

  - Transportation and other infrastructure
  - Public/private efforts for problem sites and facilities

– **Land acquisition/ownership** for providing and retaining affordable space for goods movement uses.

  - Public sector land acquisition/ownership
  - Trust for industrial land
  - Combined approach with public sector and nonprofit trust participation

– Financial and technical **assistance for goods movement businesses** to facilitate their relocation to and expansion and retention in key industrial districts in central areas.

- **Addressing Off-site Impacts and the Physical Environment** (see Section VI)

  Proactive steps by businesses, property owners, and local jurisdictions to minimize off-site community impacts and improve the physical conditions in industrial districts represent another important component of a successful goods movement land use strategy. The intent would be to reduce land use conflicts and improve the acceptability of goods movement land uses within local communities.

  - **Reduce/minimize off-site community impacts.**
    - Designate freight-oriented industrial districts away from residential areas
    - Adopt performance standards and other regulations that minimize impacts while allowing for efficient industry operations
    - Self-policing by industry and enforcement by local government
  - **Improve physical conditions** in freight-oriented industrial areas.
    - Site-level improvements:
      - Improvements to existing facilities and maintenance
      - Site design standards and regulations for new development
      - Joint public/private efforts to address problem sites and facilities
    - District-level improvements to public rights-of-way and properties
  - Institute changes in operations and other **actions with environmental and community benefits.**
    - Non-polluting fuels in truck fleets
    - Reduced truck idling at facilities
    - Green building materials and techniques for expansions and new development
    - Reduced storage and/or use of hazardous substances
    - Site clean-up and remediation

- **Leadership, Institutional Partnerships, and Education/Advocacy** (see Section VII)

  The fourth component of a regional goods movement land use strategy is concerned with leadership, constituencies, and partnerships to advocate for the program and undertake its implementation.

  - **Regional leadership.**
    - Business and related constituencies as advocates
    - Regional agencies in leadership and coordination roles

- **Building Partnerships.**

    - Land use and transportation
    - Intergovernmental cooperation: local and regional agencies
    - Public and private sector roles
    - Inter-regional coordination: Bay Area and adjacent counties

- **Raising Awareness and Visibility.**

    - Educate on the purposes and benefits of the program; "make the case"
    - Establish visibility for the program

Roles and Responsibilities for a Goods Movement Land Use Strategy

The four components of a comprehensive regional goods movement land use strategy include policies, programs, and actions that would be applicable to the public sector at both local and regional levels and other elements applicable to private sector interests. The chart in Figure 2 identifies roles and responsibilities for each of the components of the land use strategy identified above. It highlights the roles and multiple responsibilities for regional agencies (MTC, BCDC, ABAG and others), the airport and seaport authorities, local governments, and private sector interests (goods movement businesses, property owners, and related constituencies). Overall, implementation of a successful regional goods movement land use strategy would depend on the leadership and participation of multiple stakeholders and policy-makers from throughout the region.

FIGURE 2
ROLES AND RESPONSIBILITIES FOR A
REGIONAL GOODS MOVEMENT LAND USE STRATEGY

	Roles and Responsibilities			
	Regional Agencies	**Local Governments**	**Airport/ Seaport Authorities**	**Private/ Nonprofit Sector**
♦ **Land Use and Regulatory Policy**				
- Identify key locations for goods movement land uses	X (lead)	X	X	X
- Adopt local land use policies and zoning controls to designate and protect key locations for goods movement uses		X		
- Use regional plans and regulatory strategies to articulate goods movement land use objectives and help integrate land use and transportation planning	X		X	
♦ **Financial Incentives and Assistance and Other Funding Approaches**				
- Incentives for local communities to implement freight-oriented industrial land use policies	X			
- Priority funding for key freight-oriented industrial districts	X	X		
- Land acquisition/ownership to provide and retain affordable space for goods movement uses		X	X	X
- Financial and technical assistance for goods movement businesses	X	X		
♦ **Addressing Off-site Impacts and the Physical Environment**				
- Reduce/minimize off-site community impacts		X		X
- Improve physical conditions in freight-oriented industrial districts	X	X		X
- Institute changes in operations and other actions with environmental and community benefits				X
♦ **Leadership, Institutional Partnerships, and Education/Advocacy**				
- Regional leadership - Business and related constituencies as advocates - Regional agency leadership and coordination	 X		 X X	 X
- Building Partnerships	X	X	X	X
- Raising Awareness and Visibility	X		X	X

IV. LAND USE AND REGULATORY POLICY

The regulatory component of a regional goods movement land use strategy would involve identification of the best locations for goods movement land uses in support of efficient freight transportation in the region, and use of regulatory land use policies to designate and attempt to retain those locations in freight-oriented industrial use. This section describes how to approach the regulatory component. It addresses the following:

- Approach for identifying key locations for goods movement businesses and services, based on regional benefits for freight transportation and good potentials for longer-term viability in industrial use.

- Important aspects of local land use policies and zoning controls for designating and retaining key industrial locations for goods movement uses.

- Use of regional plans and regulatory strategies to articulate land use objectives and help integrate land use and transportation in support of regional goods movement.

Figure 3 on the next page summarizes the land use and regulatory strategies described herein.

Identification of Key Locations for Goods Movement Uses a Necessary First Step

Using regulatory land use policy to designate and attempt to retain locations for freight-oriented industrial land uses involved in regional goods movement begins with identifying key locations for goods movement uses. A deliberate process of identifying and evaluating locations is recommended using criteria focused on location, access, and site attributes of importance for freight-oriented industrial land uses. The approach would be to identify those locations and areas that are important to *regional* goods movement and that also possess attributes and site characteristics that make them good candidates to remain in industrial use over the longer term. This process would be beneficial in highlighting the role and importance of key industrial locations for goods movement in the region. Mapping key goods movement locations also could provide a clear statement of the intent of land use policy to retain these locations in freight-oriented industrial use.

Land use objectives for supporting the three key elements of the regional freight transportation system (described in Section II) provide a useful means of organizing the identification of key locations for goods movement uses:

- Key locations supporting the international gateway facilities at the region's major airports and seaports;

- Key locations supporting the major transportation corridors within the Bay Area, and in particular, the I-880 corridor; and

FIGURE 3
SUMMARY OF APPROACH FOR REGULATORY COMPONENT OF LAND USE STRATEGY FOR REGIONAL GOODS MOVEMENT

- Identify Key Locations for Goods Movement Uses
  - Approach based on regional benefits for freight transportation and good potentials for longer-term viability in industrial use.
  - Evaluate locations with criteria focused on location, access, and site/use characteristics
  - Key locations in central areas supporting international gateways and major goods movement corridors
  - Outlying locations supporting inter-regional gateways
- Local Land Use Policies and Zoning Controls to Designate and Protect Key Locations for Goods Movement
  - Effective local policies and controls
    - Narrow list of permitted uses
    - Prohibit most other uses
    - Prohibit conversions
    - Development controls supporting low-density, freight-oriented industrial uses
    - Performance standards and site design controls
  - Incentives for local communities to adopt restrictive land use policies
  - Model land use policies and technical assistance
- Regional Plans and Regulatory Strategies to Articulate Land Use Objectives and Integrate Land Use and Transportation Planning
  - Regional Airport and Seaport Plans
  - Regional Transportation Plan and transportation corridor plans
  - Inter-regional Partnership

- Key locations supporting the inter-regional gateways linking the Bay Area to the San Joaquin Valley and the rest of the state and nation.

The process of identifying the most important and viable locations for goods movement uses would involve local governments, regional agencies, the airport and seaport authorities, and private sector interests. The process should be led by one or more regional agencies given the need to identify key locations based on the perspective of ***regional*** benefits for freight transportation. Potentially, MTC could take the lead given its responsibilities for regional transportation planning and its role in airport and seaport planning. The BCDC also could have a lead role for aspects of the effort concerned with key locations supporting the airports and seaports.

Criteria Focused on Location and Access Attributes and Site Characteristics

Identifying important locations supporting regional freight transportation depends primarily on basic locational and access attributes such as freeway access, rail access, proximity to seaports and airports, and proximity to major business and population centers. It also depends on site characteristics that support the continued viability of industrial uses over the longer term, such as relative isolation from residential areas and overall size and scale to accommodate trucks and multiple goods movement uses.

FIGURE 4
CRITERIA FOR IDENTIFYING IMPORTANT LOCATIONS
FOR GOODS MOVEMENT USES
SUPPORTING REGIONAL FREIGHT TRANSPORTATION

- Port priority use areas in Regional Seaport Plan
- Airport use areas in Regional Airport Plan

- Along major transportation corridors
- In proximity to major airports and seaports
- Freeway access
- Rail access
- Relative isolation from residential areas
- Concentration of existing warehouse, distribution, transportation, and/or other industrial uses
- Relatively large sites and land ownerships
- Wide streets to support truck travel
- Public ownership or control of large parcels in industrial, transportation, and/or related uses
- Area of a scale to accommodate multiple goods movement uses
- Area in proximity to major business and population centers

The list in Figure 4 on the previous page identifies locational, access, land use, and other criteria for identifying areas/locations where goods movement uses can function well. At the top of the list are the airport and seaport areas designated in regional plans. Below those two items are criteria that describe important attributes of industrial areas suitable for goods movement uses and activities. Not all attributes are necessary in any particular situation. As described above, basic locational, access, and land use characteristics are the most important attributes. Certain characteristics, such as infrastructure improvements and the consolidation of parcels into larger sites can be improved over time to make an area more functional.

Key Locations in Central Areas in Support of International Gateways and Major Goods Movement Corridors

The approach recommended here would be to evaluate existing industrial locations in the central parts of the region, identifying those locations and areas that are important to regional goods movement and that possess attributes/characteristics that make them candidates for longer-term industrial use. These key goods movement locations and districts would then be the focus of industrial protection strategies seeking to retain their availability for freight-oriented land uses in the future. The existing industrial areas to be evaluated should broadly include land currently in warehouse, distribution, transportation, and similar uses, including former military bases in the central areas with industrial and goods movement uses/facilities. It is anticipated that the key locations identified in central areas would be a short list of locations and areas currently in industrial use.

Outlying Locations in Support of Inter-regional Gateways

In the context of land use in support of inter-regional gateway corridors, the approach would be to identify locations for the concentration of freight-intensive land uses and truck-related services in support of existing and potential future freight transportation corridors and to plan for land use policies and supporting infrastructure that would facilitate development and expansion of such uses in those locations. In this way, land use planning in coordination with transportation system planning could result in a more efficient inter-regional freight transportation system in the future. There also could be locations identified for retaining goods movement uses along existing inter-regional corridors, such as the I-80 corridor, as development intensifies there in the future.

Background on Regional Locations for Goods Movement Uses

Appendix A at the end of this paper provides background on locations within the region that are important for goods movement and that are candidates for designation as key goods movement locations to be retained for freight-oriented industrial uses in the future.

Use of Regulatory Land Use Policies to Designate and Retain Key Locations for Goods Movement

Important Attributes of Local Land Use Policies and Zoning Controls

Having identified the most desirable and viable locations for freight-oriented industrial uses in the region, local land use policies and zoning controls could then be tailored to designate and protect the long-term viability of goods movement uses in those areas. From the local regulatory perspective, the key issues to be addressed by land use policies include:

- The pre-emption of industrial land supply by higher-value, non-industrial uses;
- Intrusion by uses that limit industries' ability to operate; and
- Potential off-site impacts and conflicts between industrial uses and the larger, surrounding community.

While land use policies cannot change the market context for an area, they can be tailored to guide and influence the market so as to protect the viability of goods movement uses in designated areas, at least for a period of time into the future. The success of land use policies in protecting industrial uses also depends on the intelligent designation of locations and areas with good potentials for longer-term viability in industrial use, as discussed in the first part of this section.

Four Key Attributes Relating to Permitted Uses and Allowable Development

The following outlines and describes the key attributes of freight-oriented industrial land use policies and zoning controls, particularly those intended as part of a broader industrial protection strategy for retaining freight-oriented land uses in the central parts of the region. The four attributes relate to permitted uses and allowable development. These attributes reflect lessons learned from experience in many different locations and market contexts.

1. Identify a Narrow list of permitted uses

Uses permitted as of right should be general industrial types of land uses such as warehousing, distribution, heavy industry and manufacturing, transportation facilities and uses, and similar and related supporting uses. The list of permitted uses should be narrow and identify only the types of industrial and related uses desired in the area.

2. Identify other uses to be prohibited

Uses that inhibit goods movement uses or their expansion and operations should be prohibited in these districts. Uses to be prohibited should include residential uses, live/work and work/live, offices, retail and restaurant uses, entertainment uses, and consumer-oriented services and self-storage. Provisions to allow ancillary office uses and small, ancillary food service uses can be included and typically specify the maximum percentage of building space that can be devoted to ancillary uses.

When designating an area for goods movement uses, there may be existing uses of types to be prohibited in the future. Typically, policies are included to recognize the existing uses as non-conforming uses that are permitted to remain in the area, although expansion or changes to other prohibited uses are not permitted. The intent is that existing non-conforming uses will be phased out over time.

3. Prohibit conversions of existing buildings

The conversion of existing industrial buildings to live/work, work/live, office, and/or other prohibited uses should not be allowed in these districts. Such changes can attract higher-value uses to the area and can accommodate uses that can limit industry's ability to operate.

4. Adopt development controls tailored to permitted uses and designed to limit higher densities

Controls on new development such as maximum allowable floor area ratios (FARs), height limits, and other controls should be set at levels that support the types of low-density, freight-oriented industrial uses desired in the area. The controls should restrict higher-density, higher-value development.

A land use strategy with local policies and zoning controls consistent with the four key attributes above would work to limit the pre-emption of industrial land supply by restricting higher-value uses from designated areas and directing them elsewhere. It also would restrict the intrusion of uses that could limit industries' ability to operate and expand in designated areas.

Site Design and Performance Standards

Other components of local land use policies and controls include site design and related standards for new development and performance standards for controlling off-site impacts.

5. Adopt site design and performance standards that minimize off-site impacts and improve community acceptability while allowing for efficient industry operations

Site design and related standards can include regulations regarding site and driveway access, loading docks and service areas, setbacks, landscaping, parking, and signage. Performance standards relate to facility operations and typically provide standards and controls for noise, vibration, odors, lights and glare, and smoke, dust, and other emissions. There also typically are regulations relating to the use of hazardous substances, and there can be special regulations applying to truck activity.

These types of site design and performance standards can be important in minimizing off-site community impacts and improving the acceptability of goods movement land uses within the local community. These are discussed later in Section VI. which specifically addresses the aspects of an overall goods movement land use strategy that concern off-site impacts and the physical conditions in industrial districts.

Lessons learned from experience point out that it is important that these types of standards and controls are set based on knowledge and understanding of goods movement industry operations so that they will work to benefit the community while allowing for efficient industry operations as well. Often, time is needed to work through proposals to develop controls and regulations that are both workable and effective for the community and the freight-oriented industrial businesses.

Incentives Needed to Encourage Local Communities to Adopt Restrictive Land Use Policies

Despite the regional goods movement benefits from the types of land use policies and controls described above, it can be difficult to build support for implementation of such a program at the local level. As described in Phase 1, the incentives and local benefits of such policies primarily accrue to goods movement and other industrial businesses in the designated areas, to certain elements of the labor force, and to businesses and consumers in the larger regional economy. However, the sacrifices can require that local property owners and local governments forego higher property values and a higher tax base where market potentials exist for higher-value uses.

There are exceptions where local benefits are more apparent. Communities that have substantial investments in airport or seaport facilities are likely to also have constituencies interested in policies that support goods movement industries. In these or other communities where a segment of the local labor force or key business sectors depend on goods movement and related industrial sectors, there is likely to be more interest and more advocates for policies to preserve locations for freight-oriented uses. Nevertheless, the benefits of new development/reuse for property owners and developers, local governments, and community residents can also provide strong incentives for higher-value uses at the local level.

Thus, successful, land use controls for preserving locations for regional goods movement uses are likely to require new incentives to encourage local communities to adopt and implement the types of land use policies described above. The next section of this paper identifies incentives and community dividends that could be used to encourage and reward local communities to adopt freight-oriented industrial land use policies supportive of regional goods movement.

Model Land Use Policies and Technical Assistance Could Be Provided to Local Communities

As identified in Phase 1, existing land use policies in Bay Area communities typically have industrial districts that are broadly defined and flexible as to permitted uses and densities of development. The policies typically allow for new development and building conversions/upgrades to higher-value uses as the market context changes. Over time, local industrial designations are often changed to reflect the land use transition taking place. Such changes are typically in support of higher-value uses and higher-density development, reducing options for goods movement activities and other industrial uses. Thus, implementation of the types of restrictive land use policies and controls identified above would require changes in existing policies so as to support and retain locations for freight-oriented and related industrial land uses in the key areas identified in central parts of the region.

To facilitate the local implementation of industrial protection policies with benefits for regional goods movement, model land use policies could be developed and made available to local communities. A common model also could provide a degree of standardization throughout the region, within which there would be flexibility to adapt to local conditions. Technical assistance could also be available to assist in reviewing existing regulations and controls and identifying how they could be modified or changed to be more effective in protecting freight-oriented industrial districts.

Land Use Policies Applicable for Industrial Protection and for Industrial Area Zoning More Broadly

Much of the discussion above is in the context of industrial protection as most relevant for retaining location options for goods movement uses in the central parts of the region. However, the recommendations also are relevant in the context of newly developing areas in more outlying locations. While competition for land supply is less of an issue in that context, industrial land use policies and controls of the types described above could be established early-on to clearly designate land for freight-oriented industrial uses and to guide the development of a land use pattern that supports efficient goods movement and minimizes land use conflicts and off-site impacts.

Examples of Industrial Protection Land Use Policies and Controls

There are some examples of the use of land use policies and controls to establish industrial protection districts, sometimes as part of a broader industrial protection program of the type described throughout this paper.

- **City of Oakland.** Recently developed zoning for East Oakland industrial areas provides a very good example of the type of industrial land use policy described above for protecting suitable industrial locations for freight-oriented land uses. The new industrial zoning was recently developed as part of a major zoning update in Oakland. Through a close working relationship between the City and the industrial business community, an industrial protection approach was designed for the East Oakland industrial areas designated for General Industrial/ Transportation uses in the City's updated *General Plan* Land Use and Transportation Element. The new IG (General Industrial) zoning district is intended to "create, preserve, and enhance" areas appropriate for heavy industrial and manufacturing uses, transportation facilities and uses, warehousing and distribution, and similar and related uses". The district applies to areas with good freeway, rail, seaport, and/or airport access, and is generally mapped at least 300 feet from residential, institutional, or open space zoning boundaries. The new controls: permit industrial uses including trucking-related uses; prohibit most other types of uses; establish development controls at relatively low densities supportive of industrial development; include site design and landscaping provisions; and include performance standards for controlling dangerous or objectionable environmental effects.

  Oakland's recent experience in developing new industrial zoning provides a particularly good example of a process that involved both the city and the business community in crafting the new controls. Through working together, each learned more about the other's needs and concerns, so that the end product is workable from both perspectives. The new zone could succeed in supporting and protecting industrial uses in the area, based on the support of businesses and property owners, the physical characteristics and relative isolation of the area, its proximity to I-880 and Oakland's seaport and airport, and supportive City economic development goals.

- **Chicago.** In the late 1980s, the city of Chicago established "planned manufacturing districts" (PMD) to restrict non-industrial development in manufacturing areas facing economic threats from rising land costs because of commercial and residential development pressures. Four PMDs were established in existing industrial areas throughout the city. The City also has established three "industrial corridors" to protect the industries in those areas and to target public investments there.

  The PMD and industrial corridor policies have been credited with manufacturing retention and development in Chicago, due in part to the following factors. Exclusionary use restrictions were used to prohibit residential and most commercial uses in the designated areas along other development controls that were tailored to encourage industrial uses in each specific district (regulatory controls of the types described earlier in this section). In addition to these types of regulatory actions, the City also invested in industrial development programs and capital improvement funding for industrial infrastructure in the designated

areas. Chicago's environmental regulations also have been successful at governing pollution and other nuisances produced by industry. (These other aspects of a comprehensive industrial land use program are discussed in the next sections of this paper.)

- **New York City.** Concerned about the impact of real estate pressures on the viability of manufacturing industries in New York City, the nonprofit-based "Manufacturing Land Use and Zoning Initiative" recently developed a comprehensive set of recommendations for helping to retain and expand the City's manufacturing base. The recommendations identify criteria for determining which areas presently zoned for manufacturing and other industrial uses should be retained in industrial use and included in newly created "manufacturing development zones". Those zones would include special land use controls and protections to support manufacturing uses, and enhanced environmental performance and compatibility standards to improve compatibility with nearby areas. The recommendations include restricting non-industrial uses in manufacturing/industrial zones, including restricting live/work uses. Key to establishment of the new zones would be the identification of those areas that have a good chance of success in retaining manufacturing uses. Beyond the land use and zoning recommendations, the Initiative also sets forth a package of recommendations for financial and technical assistance, and environmental incentives and programs. (As discussed for the Bay Area later in this paper.)

Regional Plans and Regulatory Strategies to Articulate Goods Movement
Land Use Objectives and Help Integrate Land Use and Transportation Planning

Land use strategy development to address regional goods movement issues and challenges in the Bay Area requires a relatively unique approach. Industrial land use/protection strategies in other parts of the country have typically been done by individual major urban cities (such as Chicago, Boston, or New York City). Here, there is need for an approach covering many cities, including the three major cities in the Bay Area.

In the Bay Area context, the identification of key locations for goods movement land uses in support of efficient freight transportation in the region requires a broader view, at the regional, sub-regional, and corridor levels. It also requires a local perspective and local commitment to implement supportive land use policies and controls. New economic incentives and rewards are recommended to encourage local communities to implement land use policies with benefits for regional goods movement. (These are discussed in the next section of this paper.)

While the responsibility for land use decision-making rests at the local community level, there are regional agency responsibilities in the Bay Area for planning and permitting that affect local land use and development. Potentially, these could be more directly supportive of an approach for integrating land use and transportation planning in support of regional goods movement.

- **Regional Airport and Seaport Plans**

  Currently, regional planning for the airports and seaports focuses on the transportation facilities, and not on the nearby supply of land and the overall land use pattern needed to support the efficient use of these facilities, particularly in the future as the region grows and intensifies around them. If those planning efforts were expanded to include consideration of the land use needed nearby for supporting businesses and services, there could be opportunities for the regional entities and local communities to work together in identifying land needs and important locations for supporting airport and seaport uses. Consideration also could be given to the use of regional agency regulatory responsibilities to insure that land use policies and controls in surrounding areas are consistent with regional plans. Along those lines, consideration could be given to the following types of options as part of a larger, joint regional/local effort in support of goods movement.

  - Regional plans identify land in areas surrounding the airports and seaports for support uses. Local communities set land use policies and controls there, consistent with regional plans.

  - Regional plans identify land in areas surrounding the airports and seaports for support uses. Regional agencies use their regulatory responsibilities to insure that local land use policies and controls are consistent with regional plans. Potentially, consistency could be a condition of approval for airport/seaport facility expansions or changes in airport/seaport land designations and area boundaries.

  The next section of this paper addressing economic, financial, and funding approaches identifies a role for public sector land acquisition and other approaches for implementing and funding industrial land preservation in support of the regional freight transportation system. Those types of efforts could be combined with expansion of regional airport and seaport planning to include land needed for support uses nearby.

- **Regional Transportation Plan and Transportation Corridor Planning**

  Regional transportation planning in the Bay Area is being broadened to include consideration of the connections between transportation and land use. Recent efforts to develop a regional Smart Growth Vision for the Bay Area and to address how it could be implemented have connected land use and transportation issues and objectives and have involved regional agency participation by both MTC and ABAG. While neither agency has regulatory powers over land use, their regional plans and projections contain goals and objectives for regional land use that will influence funding priorities and provide direction for local land use policy-making.

In a similar way, regional agency focus on regional goods movement could include consideration of and direction for industrial land use patterns that support an efficient regional freight transportation system. Goals and objectives at the regional planning level could provide broader policy direction for land use in the region and influence regional agency funding priorities in support of goods movement. The regional agencies could take a lead role in identifying key locations for goods movement land uses, following the approach described earlier in this section. The identification of key goods movement locations of regional significance could "spotlight" those areas and provide direction for local land use policy-making. It also could provide a basis for evaluating existing land use policies and market trends along the major transportation corridors within the region, in the context of corridor transportation planning in support of goods movement.

- **Inter-regional Partnership**

  Cooperation among regions already underway through the Inter-regional Partnership could provide a vehicle for addressing land use in support of the inter-regional gateway transportation corridors that link the Bay Area with inland areas and the rest of the state and nation. Discussions and planning for inter-regional transportation facilities and improvements could include consideration of the industrial land use patterns that would support the infrastructure most efficiently. Overall direction from the larger context could be provided for use in local land use planning and policy-making.

V. FINANCIAL INCENTIVES AND ASSISTANCE, LAND ACQUISITION/OWNERSHIP/DEVELOPMENT, AND OTHER FUNDING APPROACHES

A successful land use strategy in support of regional goods movement is anticipated to require an economic and financial component. Incentives are needed to encourage and reward local communities and property owners for implementing land use policies in support of the regional freight transportation system. Public investments in freight-oriented industrial districts could enhance the longer-term viability of goods movement uses there. As real estate market pressures intensify, longer-term retention of affordable location options for goods movement uses also could require land acquisition/ownership approaches beyond regulatory land use policy in some central locations. There also is a role for financial and technical assistance for goods movement businesses. These types of financial incentives and programs would be most important as part of strategies to retain goods movement locations in the central parts of the region where land costs are high and where real estate market pressures are strongest.

This section describes the types of economic and financial programs and approaches that could be implemented in the Bay Area as part of a comprehensive land use strategy for regional goods movement. The following types of approaches and programs are addressed:

- Incentives to encourage and reward local communities for implementing freight-oriented industrial land use policies and controls.
- Priority funding and financial assistance in freight-oriented industrial districts in support of property owners, businesses, and local communities.
- Land acquisition/ownership for providing and retaining *affordable* industrial space for goods movement uses.
- Financial and technical assistance for goods movement businesses.

Figure 5 on the next page summarizes the programs and approaches discussed.

Incentives to Encourage and Reward Local Communities
With Freight-oriented Industrial Districts of Regional Benefit

As described in Phase 1 and in the prior section of this paper, incentives are desired to encourage and reward local communities and property owners for implementing industrial land use policies with broader regional benefits for goods movement and the economy. There are several possibilities for providing financial incentives and rewards to local communities. Most involve the targeting and prioritizing of funding from regional and state/federal sources to local industrial districts and to the communities in which they are located. The additional funding could benefit local property owners and local governments through improvements and investments in freight-oriented industrial areas that increase the desirability of those areas and enhance industrial

FIGURE 5
SUMMARY OF ECONOMIC AND FINANCIAL PROGRAMS AND APPROACHES

- Incentives for Local Communities to Implement Freight-oriented Industrial Land Use Policies
  - Grants for planning and smaller-scale improvements
  - Regional funding for road maintenance and other local costs
  - Regional funding for local industrial district support
  - Fiscal incentives
  - Credits toward other regional objectives/obligations
- Priority Funding for Key Freight-oriented Industrial Districts
  - Transportation and other infrastructure
  - Public/private efforts for problem sites and facilities
- Land Acquisition/Ownership to Provide and Retain Affordable Space for Goods Movement Uses
  - Public sector land acquisition/ownership/development
  - Trust for industrial land
  - Combined approach
- Financial and Technical Assistance for Goods Movement Businesses

business operations and property values there. Outside funding also could benefit local governments by covering costs that would otherwise have to be paid by local revenues.

The following identify a number of approaches and programs for providing new incentives and funding in support of local industrial land use patterns with benefits for regional goods movement.

- **Grants and loans for planning and for smaller-scale improvements and programs.**

  For example, MTC's Transportation and Livable Communities Program (TLC) provides planning grants, technical assistance, and capital grants to help cities and nonprofit agencies develop transportation-related projects in support of the program's objectives relating to smart growth. Recently, the program was expanded to include a housing incentive program. A program could be set up to target funding and provide incentives for freight transportation uses and industrial

districts that support the region's major seaports and airports and major transportation corridors for goods movement. Examples could include funding for local planning for industrial protection districts for freight-oriented uses. They also could include funding to improve poor conditions in older industrial areas that would enhance their acceptability to the local community including improvements to streets, medians, sidewalks, curbs and gutters, and/or street lighting (as identified later in this paper in Section VI).

- **Funding to assist with local costs associated with regional goods movement land uses and transportation facilities.**

  Local communities with the region's major seaports and airports and communities with freight-oriented industrial land uses along the major transportation corridors bear costs associated with those regional facilities, particularly costs associated with heavy truck traffic. Such costs can include those for:

  - road maintenance and resurfacing along truck routes, including non-freeway routes for overweight trucks and other routes receiving heavy truck traffic; and

  - signage, monitoring, and enforcement of truck routes, local truck parking rules, and associated regulations.

  Regional funding for truck-related road maintenance and other costs would reduce local costs associated with goods movement uses that can be disincentives to local communities. Such funding also would provide a statement or "evidence" that major transportation facilities and associated land uses in local communities are recognized as being of benefit to the larger region.

  There also could be a role for regional assistance in coordinating efforts to improve the conditions of railroad properties along the rail corridors and of state-owned properties along the major freeway corridors. These properties can be neglected and can have a negative influence on nearby areas in the communities in which they are located.

- **Grants, other funding, and technical assistance for local staffing and programs to support industrial districts and local economic development activities there.**

  For example, Alameda County's Economic Development Alliance for Business (EDAB) could target some of its efforts to freight-oriented industrial districts and provide its help in securing state economic development and other funding for local staff and programs to help manage industrial districts and provide support to property owners, businesses, and the local community. Transportation-related funds, like those used for MTC's TLC program, also could be devoted to these

types of efforts. The intent is to provide help to local communities in their support of goods movement land uses.

- **Other fiscal incentives.**

  Changes governing local government funding in California could improve the relative desirability of goods movement land uses from the fiscal perspective of local communities. In particular, changes to reduce the reliance of local governments on sales tax revenues would reduce the attractiveness of retail uses that generate sales taxes relative to industrial and other land uses. Proposals for such changes are under consideration. Other proposals to "split the assessment rolls" and remove the current limit on annual increases in assessed values of nonresidential property, would increase the attractiveness of industrial and commercial land uses relative to residential land uses (although higher property taxes would adversely affect goods movement businesses).

  Implementation of some form of regional revenue sharing also could improve the relative desirability of goods movement land uses in local communities. For example, the collection of countywide sales tax funds for transportation purposes represents a form of revenue sharing and could include funding for freight-oriented industrial districts in future measures.

  Several of the local incentive programs described above also would have fiscal benefits for local communities. Several would provide funding from regional and state/federal sources for new local programs and improvements and/or to cover costs that would otherwise require funding from local revenues. For example, regional funding for local road maintenance and resurfacing of routes with heavy truck usage would reduce local costs associated with goods movement uses and free up local revenues for other purposes. Grants and technical assistance for planning, industrial district management, and smaller-scale improvements and programs could expand local programs and improvements associated with goods movement land uses as well as cover some staffing and program costs that would otherwise require local funding.

  Beyond the accounting of revenues and costs by land use type, it is worth noting that goods movement land uses provide support for other business sectors and employment and income for residents that together effect the fiscal health of a community overall. Thus, the presence and/or retention of goods movement land uses in a community can be viewed as a fiscal incentive in larger communities with a mix of land uses and with a labor force requiring jobs that cover a range of skill and education levels.

- **Relief from or credits toward local community obligations relating to other regional land use goals/objectives; inclusion of support for regional goods movement within Smart Growth regional land use policy.**

  Local community obligations and goals under regional land use strategies could be broadened to include recognition of the role that some communities play in facilitating regional goods movement. For example, it could be recognized that communities with the region's major airports and seaports and surrounding goods movement land uses are providing for regional economic benefits that could be lost if that land were devoted to other uses. Similar recognition could apply for communities with freight-oriented land uses along I-880 and the other major transportation corridors of the region.

  Currently, land use strategies in the region are focused on Smart Growth with the goals of increasing the amount of housing built and fostering a more compact regional development pattern. The Smart Growth strategy does not directly address industrial land uses and development. Objectives for facilitating more efficient goods movement and retaining locations for freight-oriented industrial land uses could be incorporated into those overall strategies or accounted for when identifying needs, obligations, and projections for local communities under Smart Growth. The result could be less housing needs/obligations and lower projections for housing development in the communities with land devoted to goods movement uses and regional transportation facilities that are of value to the region and should be retained. Such actions could help in encouraging local communities to support regional goods movement objectives. They also could lessen the effects of the current Smart Growth strategy on increasing redevelopment pressures in the central, bayside areas and making it increasingly difficult to retain goods movement uses in central locations in the future.

Priority Funding and Redevelopment Assistance
to Support Freight-oriented Industrial Districts

There are other programs and approaches for funding transportation and other infrastructure improvements in freight-oriented industrial districts and for providing financial assistance to facilitate the development and modernization of industrial facilities there. The intent would be to target public investments so as to enhance the desirability and competitiveness of key locations and provide incentives and assistance for property owners in favor of retaining properties in freight-oriented industrial use. In the central parts of the region, these investments could enhance the longer-term viability of industrial districts for goods movement uses. In outlying locations, the investments could help direct and support freight-oriented industrial expansion in newly developing areas.

- **Priority funding for transportation improvements.**

  There are transportation improvements that could enhance accessibility to/from local freight-oriented industrial districts and the regional highway network,

improve circulation within industrial districts, and/or help to accommodate truck traffic locally including routing it away from surrounding areas. Efforts to prioritize and target transportation funding from regional and state/federal sources to these types of improvements in or around freight-oriented industrial areas could benefit goods movement business operations there. In the central parts of the region, in particular, such improvements could enhance the longer-term viability of industrial districts for goods movement land uses. In outlying locations, such improvements could help direct and support freight-oriented industrial expansion in desired locations in newly developing areas.

Another component of this Phase 2 effort has involved the review and evaluation of transportation projects from throughout the region to identify those of benefit for regional goods movement. In the future, project evaluation by MTC and the CMA's could incorporate criteria relating to the establishment and preservation of industrial districts for goods movement land uses when prioritizing projects for funding. Caltrans also could consider including freight-oriented industrial district criteria in its process for prioritizing planning and capital facilities funding. Another option would be for regional and state transportation agencies to create a separate pool of funds to be made available for capital improvements of benefit to key industrial districts for goods movement uses.

- **Redevelopment agency funding for infrastructure and transportation improvements.**

  At the local level, redevelopment agency funding could be allocated for transportation improvements of the types described above or for other infrastructure needed to improve the functioning and longer-term viability of key industrial districts for goods movement uses. This approach could be particularly applicable in central locations in proximity to the major international gateway facilities, where improvements could help in retaining locations in surrounding areas for support uses, thereby enhancing the overall, longer-term competitiveness of the seaport and airport facilities. In those situations, redevelopment agency investments in surrounding areas could enhance overall tax revenue-generating potentials from the area in the future as a result of higher levels of goods movement and related business activity associated with the international cargo and trade.

- **Redevelopment agency and other assistance for redevelopment and modernization of older industrial facilities in central locations.**

  Industrial areas in central locations around the Bay include older, out-moded facilities and sites that can be costly and difficult to modernize and redevelop. In some cases, redevelopment agency assistance and other funding will be needed to address the costs and complications associated with the demolition of old, contaminated facilities or with the remediation of brownfield sites. Agency assistance and funding also could be needed to assemble smaller sites into larger

parcels that can be redeveloped for efficient, modern distribution facilities. Such investments on the part of the public sector are important in improving the longer-term viability of key industrial districts for goods movement uses in the central areas of the region. They provide incentives and assistance to property owners and industrial businesses in favor of retaining properties in industrial use.

Funding for the above types of redevelopment typically come from local redevelopment agency tax increment funding. A regional pool of funds for such purposes also could be established from existing or new transportation-related funding sources identified earlier and in the next subsection. The retention and modernization of industrial locations and facilities that could be achieved by such funding would support the international gateway facilities and the major goods movement corridors, enhancing longer-term economic competitiveness and tax revenue-generating potentials.

Land Acquisition/Ownership for Providing and Retaining Affordable Locations for Goods Movement Uses

As real estate market pressures continue to intensify, long-term retention of affordable land and building space for goods movement uses in the central parts of the region may require the purchase of industrial land/space by an entity that would then preserve it for goods movement uses. Adoption of freight-oriented industrial land use policies and zoning controls for key industrial locations (as described in Section IV.), is necessary but is unlikely to be sufficient to retain the longer-term availability of affordable industrial land and space in some parts of the region. Thus, this subsection identifies strategies for retaining some affordable industrial locations over the long term, particularly locations in proximity to the international gateways and the major transportation corridors in the central parts of the region. The approaches described include acquisition/ownership by the public sector and/or by a nonprofit, land trust created to provide institutional support for freight-oriented industrial retention.

Public Sector Land Acquisition/Ownership

Land could be acquired and owned by the public sector for the purpose of providing and retaining affordable locations for goods movement uses in key parts of the region. Public ownership could assure the long-term availability of needed locations for important support uses in proximity to the major seaports and airports, for example. The chart in Figure 6 summarizes how public sector land acquisition/ownership could work.

The public acquisition of industrial land for goods movement uses could be done by local redevelopment agencies to the extent that key industrial locations are within redevelopment project areas, as is the case in many of the older industrial areas around the Bay. The airport and seaport authorities also could acquire land to the extent that it is land needed to support their main facilities. In some cases, there could be land in key industrial locations that is already publicly owned (such as formerly military base property). That land could be transferred or sold among public entities to provide for its long-term use in support of goods movement.

FIGURE 6
PUBLIC SECTOR LAND ACQUISITION/OWNERSHIP TO RETAIN AFFORDABLE LAND/SPACE FOR GOODS MOVEMENT

- **Possible Public Entities to Acquire Land/Property**
  - Airport and seaport authorities
  - Redevelopment agencies, local development corporations, cities, counties

- **Possible Roles for Public Sector in Ownership**
  - Public entity owns land and buildings, and manages and leases space.
  - Public entity owns land and buildings, and contracts out for managing and leasing the property.
  - Public entity owns land and leases property to tenant/developer who makes improvements and occupies or manages/leases the space.
  - Public entity acquires/owns property that is sold or transferred to a nonprofit trust or similar regional entity set up to provide institutional support for industrial retention.

- **Potential Funding Needs**
  - Upfront funding for purchasing property and for other capital improvements (if any); to be repaid by future lease revenues.
  - Funding to subsidize or cover any gap between actual acquisition and capital costs, and the value supported by future revenues.

- **Potential Funding Sources**
  - For Upfront Funding and Potential Subsidies:
    - Airport/seaport revenue-based funding
    - Redevelopment Agency tax increment funding
    - Funds from sale of other public property, such as property no longer needed for airport/seaport uses.
    - Transportation funds from regional/state/federal sources, as an incentive for preserving locations of regional benefit for freight-oriented land uses.
      - Funds set aside from existing sources
      - Funds from new sources such as future sales tax measures for transportation purposes
    - New "cross-subsidy" or mitigation credit programs:
      - New development allowed in transitioning industrial areas generates funds for preserving affordable industrial locations in other areas key to goods movement:
        - exactions from new development; payments for mitigation credits for developing land for higher-value uses
        - share of additional tax revenues generated
      - New commercial/industrial development or all new development is assessed a small fee for use in preserving affordable locations for regional goods movement with overall economic and environmental benefits.

  - Revenues to Repay Acquisition and Capital Costs:
    - Lease revenues from the industrial properties acquired/owned for goods movement use.

The public sector's role in ownership can vary, from an active developer/manager role to a more passive landlord position. The public sector also could own or acquire property that is eventually sold or transferred to a nonprofit trust or similar regional entity set up to provide institutional support for industrial retention. In any of these cases, the property would remain available for freight-oriented industrial uses at affordable market rents over the long term.

The funding needs for financing public sector land acquisition/ownership focus on the upfront funding required for purchasing property and funding any renovations or other capital improvements required for leasing the space. Over time, the future revenue stream from the property would repay those initial costs. In some cases, there could be a subsidy required to cover a gap between the acquisition and other capital costs and the value supported by future revenues from the property in affordable industrial use.

The upfront funding for public land acquisitions could come from a variety of sources, as listed in Figure 6. Potentially, the sources could include funding supported by airport/seaport operations, redevelopment agency tax increment funds, and the sale of other public property. Transportation funds from existing or new regional/state/federal sources could be set aside and made available to supplement local sources as an incentive for preserving industrial locations of benefit for regional goods movement. A potential new regional source could include the identification of funding for industrial land preservation in future sales tax measures for transportation purposes.

New, "cross subsidy" or mitigation credit programs are also identified as possible sources of additional funding on the list in Figure 6. The intent would be to capture a share of increased property value from new development occurring on industrial lands transitioning to higher-value uses outside of the key industrial districts for goods movement uses. A cross-subsidy program could be designed in coordination with regulatory land use policies such that some areas are allowed to transition to higher-value uses in return for the funding that could be provided for the retention of other industrial locations. Implementation of a broader, relatively low fee on new development throughout the region also could be considered an option for generating funds for preserving affordable locations in support of regional goods movement thereby providing overall regional economic and environmental benefits.

From a real estate market perspective, it would make sense to undertake public sector land acquisition/ownership of key goods movement locations sooner rather than later, as property values and development pressures are anticipated to continue to increase and even accelerate over time in the central areas, as described in the Phase 1 work. The benefit of public ownership is to remove the property from the competitive forces of the real estate market, so that the sooner that occurs the better.

Examples of Public Acquisition/Ownership of Industrial Land

- **City of Boston.** The Marine Industrial Park located on Boston's waterfront is the largest industrial park in Massachusetts. The 191-acre site was purchased by the City of Boston in 1977 to create and retain jobs and economic activity that enhance the city's economy and provides employment for city residents. Today, there are 3.1

million square feet of building area in the park, approximately 95 percent occupied. The availability of low-cost industrial space and unique maritime infrastructure has enabled the park to attract and retain many new and expanding businesses including a wide variety of marine-related, industrial, and light-industrial businesses. Over 3,500 jobs are based in the park. Because of its success, the City would like to expand its industrial area holdings. The city-owned industrial park has been a big part of an overall strategy for preserving industrial and manufacturing business activities in the City of Boston.

- **Bay Area Seaports and Airports.** The major airports and seaports in the Bay Area are on publicly-owned land reserved for those uses. The land holdings and properties include facilities developed and operated by the public entities, facilities developed by the public and leased to the private sector, and publicly-owned land leased to private sector tenants who provide the facility improvements for their operations. Revenues from leases and facility operations provide the needed funding. These entities provide examples of how the above-described approaches for public acquisition/ownership could work. They also could be the entities to expand their operations to include additional locations for support uses relating to the cargoes moving through their airport and seaport facilities. As an example, the *Port Services Location Study*, completed for the Port of Oakland in 2001, describes options for the roles the Port could take in providing affordable space for core service uses.[1] A range of strategic options and trade-offs are identified from the least ambitious and least fruitful to the most demanding and effective. At the latter end are options for acquiring and owning property for core port services.

- **Closed Military Bases in the Bay Area.** There are several, recently closed military bases with publicly-owned industrial facilities that are currently being leased to industrial tenants, including the former Oakland Army Base, Alameda Naval Air Station, and Mare Island Naval Shipyard. Public base reuse authorities are the entities with responsibility for operations and leasing at the bases, sometimes with assistance from private sector real estate companies. Although the leasing of these facilities for industrial uses is seen as interim in most cases, they provide examples of how publicly-owned facilities could be leased for private sector industrial tenants over the longer term. With a longer time horizon, tenants could invest in facility improvements and lease terms could provide funds for site/facility upgrading over time.

Trust for Industrial Land to Support Goods Movement

A trust could potentially be created to provide institutional support for industrial land retention. The trust would be a new, nonprofit entity established to acquire/own land and facilities in locations and designated industrial districts of importance for regional goods movement. Creation of a trust would require establishing the public benefits of preserving land that is

[1] *Port Services Location Study for the Port of Oakland,* June 2001, by The Tioga Group and associated consultants.

important to the region. The trust could acquire, own, renovate/develop, manage/lease, and/or sell properties itself or in combination with other entities in the public, private, or nonprofit sectors. Figure 7 provides a summary of how a land trust could work.

A land trust or similar nonprofit entity could perform much of the role described above for public sector land acquisition/ownership and could take advantage of many of the same funding sources, if contributed by the public sector to the trust. A land trust also offers some additional advantages, identified as follows:

- Access to private funding sources.

  A nonprofit trust could have access to private funding sources including grants and donations from foundations, business groups, economic development groups, corporations, and individuals. It could also receive donations in exchange for tax benefits.

- Regional perspective.

  A single trust could be set up to support ***regional*** goods movement and to have projects in different jurisdictions throughout the region with a focus on locations surrounding the international gateways at the airports and seaports and the major transportation corridors. By comparison, a public sector approach with a regional focus would be more complicated and would have to involve multiple public entities, each focused on their own jurisdiction, and likely including cities, redevelopment agencies, and airport and seaport authorities.

- Efficient deal-making ability.

  An industrial land trust would be a relatively small organization created for a specific purpose. It could be efficient and effective in negotiating and making deals similar to a private sector organization. It would be able to avoid the time and other requirements that can be involved in a public agency decision-making process, particularly when multiple objectives are involved.

- Relatively low-cost operations.

  Typically, the staff of a land trust is skilled and experienced and is relatively few in number. As a nonprofit entity, all revenues from the lease of properties can be devoted to acquiring additional properties after operating costs are covered.

  Further, because of its focus on a single mission, an industrial land trust would not have operational or construction-related requirements that can add costs under public sector ownership.

FIGURE 7
LAND TRUST TO RETAIN AFFORDABLE
INDUSTRIAL LAND/SPACE FOR GOODS MOVEMENT

- New entity created as a nonprofit to support industrial land retention; would have to establish the public benefits of preserving land important to the region.
- Roles for Trust
  - Trust could acquire, own, renovate/develop, manage/lease, and/or sell industrial property.
  - Trust could work alone or in combination with other entities in the public, private, or nonprofit sectors.
  - Trust could acquire, receive, hold, and/or sell development rights, separate from the real property.
- Potential Funding Needs
  - Upfront funding for purchasing property and for other capital improvements (if any); to be repaid by future lease revenues or land sales.
  - Funding to subsidize or cover any gap between actual acquisition and capital costs, and the value supported by future revenues in affordable industrial use.
- Potential Funding Sources for Trust Activities
  - Private funding sources including grants and donations from foundations, business groups, economic development groups, corporations, and individuals.
  - Donations for receipt of income tax credits.
  - Public funding sources from public agencies (see list in Figure 6).
- Advantages of a Land Trust
  - Access to private funding sources.
  - Regional perspective possible.
  - Efficient deal-making ability.
  - Relatively low-cost operations.

A trust for industrial land could be funded through several potential sources and mechanisms. It could be funded by grants or contributions from the public sector, foundations, economic development organizations, business groups, or private entities and individuals. If established as a nonprofit entity, a trust could receive and hold development rights and could benefit from private sector contributions made for tax benefits. A trust also could receive funding from many of the sources identified above under a public sector land acquisition strategy.

Examples of Land Trusts

- **Land Trusts for Conservation or Agricultural Preservation.** There are examples of successful land trusts in the Bay Area and throughout the country. They are typically focused on preserving agricultural land, on preserving important natural

environmental resources for public use and benefit, or on protecting land for urban parks, open space, scenic beauty, and recreation. Examples of active land trusts in the Bay Area include the national Trust for Public Land, the Marin Agricultural Land Trust, and the Peninsula Open Space Trust. The functioning of existing land trusts provide models for the type of trust that could potentially be created for freight-oriented industrial land preservation of regional benefit, as described above.

- **New York City.** Concerned about the impact of real estate pressures on the viability of manufacturing industries in New York City, the nonprofit-based "Manufacturing Land Use and Zoning Initiative" recently developed a comprehensive set of recommendations for helping to retain and expand the city's manufacturing base. The recommendations include the creation of a Trust for Industrial Space to acquire and renovate space suitable for use by manufacturers and affordable to them. An emphasis of the proposal is the provision of affordable space, particularly for small- to mid-sized businesses who lease rather than own their space. The recommendations are similar to the approach described above as a potential option for the Bay Area.

Combined Approach With Public Sector and Nonprofit Trust Participation

The two approaches described above for providing and retaining affordable industrial space supporting regional goods movement could both be implemented in the Bay Area.

A public sector strategy for freight-oriented industrial land acquisition/ownership could be implemented in local communities in proximity to the international gateways and major transportation corridors, and where economic development and job opportunities for residents are important objectives. Such a strategy also could be implemented by the major airport and seaport authorities, on their own or in partnership with nearby communities. Initiatives also could be undertaken to create new public funding sources in support. These could include the allocation of a share of regional/ state/federal transportation funds, inclusion of freight-oriented industrial land preservation funding in future sales tax measures for transportation, and/or implementation of new cross-subsidy or mitigation credit programs at the regional or subregional levels.

A land trust for freight-oriented industrial land preservation also could be created, with a more regional focus. It could function in partnership with public agencies and would supplement their efforts. It could provide the ability to capture additional funding from private and foundation sources. It also could provide different abilities to negotiate and make deals for properties and could operate in different locations. The trust could provide technical assistance to local and regional public agencies, and could also perform an overall, coordinating role.

Financial and Technical Assistance for Goods Movement Businesses

A comprehensive land use strategy also could include a role for financial and technical assistance for goods movement businesses to facilitate their relocation to and expansion and retention in

key industrial districts to be retained for goods movement uses in the central parts of the region. For example, the loan and grant programs could help with moving costs and facility expansions or modernizations, and could provide working capital for growth. Technical assistance could be of help in finding locations, securing needed permits and approvals for facility improvements, and in dealing with local regulations and requirements.

Currently, there are a variety of economic development programs in Bay Area cities and counties that could provide the above types of assistance. There also are investment incentives and business loan programs available at the state level, that are focused on small business assistance, loan guarantees and capital access, and loans, grants, and other incentives for growing export sales. However, the available assistance is not targeted to goods movement businesses or freight-oriented industrial districts, and such businesses may not be aware of what is available.

As part of a comprehensive land use strategy for regional goods movement, existing business assistance programs could be assessed and efforts directed at targeting them to goods movement businesses. There also is a role for an entity that could provide technical assistance, identify available programs at the local and state levels appropriate for goods movement businesses, and seek to fill gaps where needed assistance or funding may not be available or not targeted to freight-oriented industrial activities.

There also are state Enterprise Zone Programs and the federal Empowerment Zones and Enterprise Communities Programs that provide tax incentives to businesses located in the zones. The federal program also provides grants to localities for investment in the designated areas. To the extent that key locations and industrial districts in support of goods movement are within these zones, there could be advantages to goods movement businesses located there. For example, there are Enterprise Zones in locations in proximity to the region's international gateway facilities and the major transportation corridors, including zones in Oakland, Richmond, and San José. Efforts to provide information to goods movement businesses about the tax incentives available in these zones may assist in retaining or attracting businesses in some of the key freight-oriented industrial areas.

VI. ADDRESSING OFF-SITE IMPACTS AND THE PHYSICAL ENVIRONMENT

Proactive steps by goods movement businesses, property owners, and local jurisdictions to minimize off-site community impacts and improve the physical conditions in industrial districts represent another important component of a successful goods movement land use strategy. The intent is to reduce land use conflicts and improve the acceptability of goods movement land uses within local communities. The following three aspects of this component are addressed in this section:

- Reducing/minimizing off-site community impacts.
- Improving physical conditions in freight-oriented industrial districts.
- Changes in operations and other actions that could provide environmental benefits.

Figure 8 on the next page summarizes the strategies discussed under each of these topics in the rest of this section.

Reducing/Minimizing Off-site Community Impacts

In parts of the Bay Area, residents of communities adjacent to industry have increased their opposition to the negative impacts associated with some industrial uses and goods movement activities. The truck activity associated with goods movement can raise local community concerns over truck traffic, neighborhood safety, noise, and emissions. Sometimes community impacts arise because of the close proximity of industrial and residential land uses. These conflicts are increasing as reuse and redevelopment for residential and commercial uses occur in the central parts of the region. In some cases, community impacts can be caused by industrial businesses that are not good neighbors.

The viability of freight-oriented industrial districts over the longer term and the success of land use preservation strategies described in this paper depend on minimizing off-site community impacts and improving the acceptability of goods movement land uses within the local community. Actions or programs to minimize off-site impacts must still allow for efficient industry operations, however. The following identify attributes of a strategy for achieving these objectives.

Designating Freight-oriented Industrial Districts That Are Relatively Isolated from Residential Areas

Section IV of this paper describes locational, access, land use, and other criteria for identifying areas/locations where goods movement uses can function well in support of regional freight transportation and where regulatory land use policies and zoning controls will have the best chance of being effective in maintaining viable industrial areas. The list includes "relative

FIGURE 8
SUMMARY OF STRATEGIES TO MINIMIZE OFF-SITE IMPACTS AND IMPROVE PHYSICAL CONDITIONS SO AS TO ENHANCE COMMUNITY ACCEPTABILITY OF GOODS MOVEMENT LAND USES

- **Reduce/Minimize Off-site Community Impacts**

  – Designate industrial districts that are relatively isolated from residential areas.
  – Adopt performance standards and other regulations that minimize impacts and improve community acceptability, while allowing for efficient industry operations.
    - noise, vibrations
    - lights and glare
    - odors, smoke, dust
    - particulate matter and air contaminants
    - hazardous substances
    - trucks/truck activity
  – Collaboration between industry representatives and local government to develop workable and effective standards.
  – Model standards and technical assistance for use by local communities.
  – Self-policing by industry and enforcement by local government.

- **Improve Physical Conditions in Industrial Areas**

  Site-level Improvements
  – Improvements to existing facilities and maintenance
    - fencing and screening
    - landscaping and plantings
    - painting, signage, awnings
    - trash removal, clean-up
    - reduce over-use of sites and blocking of public rights-of-way
  – Site design standards and regulations for new development
    - site and driveway access
    - loading docks and service areas
    - setbacks and landscaping
    - on-site parking
    - signage
  – Joint public/private efforts to address problem sites and facilities
    - vacant, outmoded facilities
    - site remediation

  District-level Improvements
  – Improvements to public rights-of-way and properties
    - streets, medians, sidewalks, curbs and gutters
    - street lighting
    - railroad property and state property in and around freeways

- **Changes in Operations and Other Actions to Provide Environmental and Community Benefits**

  – Non-polluting fuels in truck fleets
  – Reduced truck idling at facilities
  – Green building materials and techniques for expansions and new development
  – Reduced storage and/or use of hazardous substances
  – Site clean-up and remediation

isolation from residential areas" as one of the characteristics of sites and areas that supports the continued viability of goods movement uses over the longer term. Similarly, while efforts to minimize off-site impacts should occur in all industrial locations, the effectiveness of those efforts as part of a larger strategy to retain goods movement uses and support the longer-term viability of freight-oriented industrial districts depends on the designation of locations and districts where land use conflicts and off-site impacts can be minimized. Such locations are those where goods movement land uses are relatively isolated from residential areas and are located in proximity to major freeway corridors or the major airport and seaport facilities so that truck access to those facilities and routes can occur away from residential areas. In these locations and districts, it is also important that land use policies and zoning regulations are in place to prohibit residential and live/work uses in the areas in the future (as described in Section IV).

Adopting Performance Standards and Other Regulations to Minimize Off-site Impacts and Improve Community Acceptability While Allowing for Efficient Industry Operations

Local land use policies and controls can include performance standards relating to the off-site impacts of industrial and other uses. Performance standards regulate facility operations and typically provide standards and controls that address the degree of noise, vibration, odors, lights and glare, smoke, dust, and other emissions including particulate matter and air contaminants. There also typically are regulations relating to the presence/use of hazardous substances, and there can be regulations applying to trucks and truck activity. There can be special standards applicable to uses at the edge of industrial zones if they are within a certain number of feet of residential areas. Generally, it is preferred that other uses (such as light industrial or commercial) exist between industrial and residential zones to provide a buffer area.

The use of regulatory land use policies to designate and retain key locations for goods movement uses, as described in Section IV, identifies performance standards for freight-oriented industrial operations in addition to policies and controls for permitted uses and allowable development in those areas. The inclusion of performance standards is to minimize the potential for off-site impacts, hazards, or nuisances, and improve the acceptability of goods movement land uses within the local community. Clearly articulated standards can be of benefit by making requirements clear to industry and by providing the community with protections.

Lessons learned from experience with performance standards point out that it is important that standards and controls are set based on knowledge and understanding of industry operations so that they will work to benefit the community while allowing for efficient industry operations as well. Within designated industrial areas for goods movement uses, the intent of performance standards would be to minimize off-site impacts, not to make it more difficult or more costly for industry to operate there such that businesses would leave the area because of the standards. Collaboration between local government staff and industry representatives is important in developing standards and controls that are workable for goods movement businesses and effective for the community.

Outside of designated industrial districts, performance standards can be more problematic for the goods movement industry and may preclude business expansions in situations where existing industrial and residential uses are in close proximity. In those situations, the intent of land use policy may be to create a buffer between heavier industrial uses and residential uses by limiting some activities and requiring special standards where existing industrial businesses abut, are across from, or are very close to residential uses. Policies are likely to promote lighter industrial and commercial business activities there over the longer term. Existing uses are typically allowed to remain, but may not be able to expand. Special regulations on truck-related activities might also apply.

Model Performance Standards and Technical Assistance Could Be Provided to Local Communities

As identified in Phase 1, many communities in the Bay Area already have some form of performance standards for industrial uses. Implementation of the type of goods movement land use strategy described in this paper would require that existing standards be reviewed and modified as needed to support and retain locations for freight-oriented land uses in key areas, particularly in the central parts of the region. Model standards could be developed and made available to local communities. A common set of standards could provide a degree of standardization throughout the region, within which there could be flexibility to adapt to local conditions. Technical assistance also could be available to assist in modifying or developing standards that are effective and workable in industrial districts with freight-oriented and related land uses.

Self-policing by Industry and Enforcement by Local Government

Goods movement businesses should be proactive in doing their best to be good neighbors and abide by the standards and regulations set for the area. Further, they should encourage vendors, independent truckers, and others who visit their establishments to do the same, including following designated truck routes, speed limits, and parking regulations, and avoiding neighborhood streets. Even a few businesses that are not good neighbors can cause problems for the rest of the group and the industrial area overall. Self-policing on the part of businesses in the area can head off problems and greatly improve relations with the nearby community.

The local government also should enforce performance standards and regulations as a reminder to the business community and as evidence of their commitment to nearby areas. Enforcement should be conducted in a consistent and predictable manner, and focused on problem-solving to effect compliance rather than simply the enforcement of penalties. Coordination between the goods movement business community and the local government could provide the mechanism for addressing problems and compliance issues.

Improving Physical Conditions in Freight-oriented Industrial Areas

The physical conditions in freight-oriented industrial areas also can affect the acceptability of goods movement land uses within the local community. The condition of improvements and the maintenance of properties can both be issues. Poor conditions of properties in older industrial

areas, in particular, can give a poor image to the industrial district overall and can add to the community's reasons for desiring new uses through redevelopment. Physical conditions in freight-oriented industrial districts can be addressed from the perspective of the condition of individual properties at the site level, and from the perspective of the condition of streets, sidewalks, and public areas at the district level.

Site-level Improvements

- Improvements to Existing Facilities and Maintenance

  Property owners and businesses in freight-oriented industrial districts should take steps to improve and maintain the condition of their properties, giving attention to how individual properties contribute to the health and image of the area overall. The following types of improvements could be beneficial for industrial areas:

  - Fencing and screening of open yards, storage areas, and parking areas; use of attractive fencing where appropriate;
  - Removal of trash, weeds, etc. such as along fences; covering and screening of trash receptacles; overall clean-up;
  - Landscaping or plantings such as at front of buildings, if appropriate;
  - Building upkeep and repair, painting and the removal of graffiti, and/or attractive signage and awnings, as appropriate; and/or
  - Elimination of the over-use of sites where equipment and storage extend to property lines and vehicles occupy public rights-of-way.

  The appropriateness of the above types of improvements depends on the type of business activity on the site. The intent is not to increase costs for property owners and goods movement businesses, but to encourage owners to improve and maintain properties, thereby contributing to the longer-term viability of the area for goods movement uses.

- Site Design Standards and Regulations for New Development

  Local land use policies and zoning controls typically include site design and related standards for facility expansions and new development in industrial areas. These can include regulations regarding site and driveway access, loading docks and service areas, setbacks, fencing, landscaping, on-site parking, lighting, and signage. The intent is to insure that the industrial operations can occur on the site without affecting nearby properties and with safe and efficient access for trucks and other vehicles. In key locations for goods movement industries, site design standards and regulations should be consistent with the operational and facility needs of freight-oriented uses and activities. As discussed in the regulatory section and, above, in reference to performance standards for minimizing off-site impacts, model regulations and design standards could be developed for areas with goods movement land uses and made available to local communities, along with technical assistance. Collaboration between local government staffs and industry representatives would also be useful in developing effective and workable standards and regulations.

- Joint Public/Private Efforts to Address Problem Sites and Facilities

  In older industrial areas, there can be sites with vacant, outmoded facilities that are costly and difficult to modernize and redevelop. There also can be brownfields sites requiring costly remediation. Vacant sites and properties due to these conditions can be a blight on industrial areas, adversely affecting the desirability and image of the industrial district overall. In these cases, redevelopment agency assistance and other public funding could be targeted to assisting private owners in improving and redeveloping industrial properties into modern facilities for goods movement uses (as discussed in the prior section addressing the economic and financial components of a comprehensive goods movement land use strategy). Such investments would greatly improve the physical conditions in freight-oriented industrial districts, contributing to the longer-term viability of goods movement uses in those locations.

District-level Improvements

The physical condition of streets, sidewalks, and other public areas also can influence the acceptability of freight-oriented industrial districts within the local community and can improve the longer-term viability of goods movement uses there. Examples of poor conditions that can have adverse effects include the following:

- the poor condition of streets, with potholes and pavement breaks and in need of resurfacing;
- sidewalks needing repair and the lack of sidewalks and curbs and gutters in some places;
- poor street lighting;
- lack of any landscaping, and/or the presence of poorly maintained medians; and/or
- the presence of poorly maintained railroad property or state property in and around freeways.

Many of the above types of conditions can exist in older industrial areas in the central parts of the region, in particular. Steps to improve these conditions could have a positive effect on the district overall and the larger community. The discussion in the prior Section V considers funding sources for such improvements, identifying potential local and regional sources. Improvements of these types provide good examples of improvements that could be funded by regional sources as incentives to encourage and reward local communities with freight-oriented industrial districts of regional benefit for goods movement. Regional efforts could also be of benefit in helping to address problem conditions with railroad and state-owned properties.

Changes in Operations and Other Actions That Could Provide Environmental and Community Benefits

In addition to minimizing off-site impacts and improving physical conditions in freight-oriented industrial districts, there are changes in the operations of local goods movement businesses and other actions that could provide environmental and community benefits. Examples could include the following:

- Increased use of non-polluting fuels in the truck fleets of local businesses;
- Changes in operating procedures that could reduce truck idling and wait times at industrial facilities;
- Use of green building materials and technologies in facility expansions and new development;
- Reductions in the storage or use of hazardous substances on-site; and/or
- Remediation of soil problems and contamination on the site.

Instituting these types of changes could be among the efforts needed to gain support from local communities and the broader public for a comprehensive land use strategy for goods movement uses.

VII. LEADERSHIP, INSTITUTIONAL PARTNERSHIPS, AND EDUCATION/ADVOCACY

The fourth component of a comprehensive regional goods movement land use strategy is concerned with leadership, constituencies, and partnerships to advocate for the program and undertake its implementation. This section addresses three aspects of implementation under the following topics:

- Regional Leadership
- Building Partnerships
- Raising Awareness and Visibility

Figure 9 below summarizes the key points discussed under each topic.

FIGURE 9
SUMMARY OF STRATEGIES FOR LEADERSHIP, BUILDING PARTNERSHIPS, AND RAISING AWARENESS AND VISIBILITY

- **Regional Leadership**
  - Businesses and related constituencies as advocates
    - Build alliances of business, economic development, labor, and international trade interests
    - Build constituencies at the local and regional levels
    - Work closely with political leaders
    - Lead roles for Bay Area Council and EDAB, initially
  - Regional agencies in leadership and coordination roles
    - Policy direction and program support, individually
    - Overall coordination, technical support, and policy direction, collectively
    - MTC in lead role initially, with lead responsibilities in land use for ABAG and BCDC
    - To address whether and how to integrate land use strategy for goods movement with Smart Growth strategy
- **Building Partnerships**
  - Land use and transportation
  - Intergovernmental cooperation: local and regional agencies
  - Public and private sector roles
  - Inter-regional coordination: Bay Area and adjacent counties
- **Raising Awareness and Visibility**
  - "Make the case" for the program
  - Establish visibility

Implementation of a comprehensive land use strategy as described in this paper would be done as part of a larger regional strategy initiative for goods movement in the Bay Area. The larger strategy would include transportation system improvements and programs as well as a land use component, as described herein. Thus, aspects of leadership, partnerships, and raising awareness/visibility identified in this section may also apply to the larger strategy effort. However, they are addressed here with focus on the implementation of land use strategies as part of a larger goods movement initiative.

Regional Leadership

Undertaking a land use strategy initiative for goods movement in the Bay Area would require strong regional leadership to build constituencies and partnerships to advocate for the program and undertake its implementation.

- Business and Related Constituencies As Advocates

  Advocacy by business constituencies is crucial to the success of a regional goods movement land use strategy initiative. Organizations focused on economic development, jobs and labor, and international trade are natural allies with regional and local business groups on issues of goods movement and could combine forces on advocacy efforts. These constituencies are important as they have influence with political leaders and government officials. They include the groups that would benefit most directly from a more efficient freight transportation system and its benefits for the regional economy.

  The following list identifies the types of organizations and interest groups that could provide the needed advocacy efforts:

  - The Bay Area Council
  - Economic Development Alliance for Business (EDAB)
  - Silicon Valley Manufacturing Group
  - International trade councils and organizations
  - Chambers of Commerce
  - Labor Unions
  - Port Authorities, seaport and airport tenants groups, and related organizations
  - County and local economic development organizations (besides EDAB)
  - Other involved business groups like the Industry and Labor Alliance of Oakland and the West Oakland Commerce Corporation

  EDAB and the Bay Area Council could take lead roles initially, given their involvement in the current *Goods Movement Study* and their interest in this issue already.

It would be important to build constituencies and advocates at both the regional and local levels. While the overall land use strategy identified is a regional approach, there are specifics unique to different parts of the region, and the need to work closely with the local governments responsible for land use decision-making at the local level.

Advocacy efforts should include developing champions in the political arena who understand the issues and who can speak about and advocate for goods movement interests. Elected officials in districts with the international gateway facilities and the major freight transportation corridors are likely to be the most interested and receptive because of the direct effects of goods movement on their constituents.

- Regional Agencies in Leadership and Coordination Roles

Land use strategies identified in this paper are designed to influence land use patterns in ways that support a more efficient freight transportation system and provide regional economic and environmental benefits. The success of such a program would require leadership from the regional agencies with a role in transportation and land use decisions and investments in the region. The regional agencies *individually* could provide policy direction and support for a regional land use initiative for goods movement through their regional analyses and projections, regional plans, regulatory responsibilities, and financial incentives and investments, as appropriate in each case. *Collectively*, they could provide overall coordination and direction at the regional level and support for intergovernmental coordination between local and regional agencies. Recent and ongoing efforts for the regional Smart Growth strategy in the Bay Area provide an example of the leadership role that the regional agencies could play in a regional goods movement land use strategy.

The five regional agencies include the following:

- Metropolitan Transportation Commission (MTC)
- Association of Bay Area Governments (ABAG)
- Bay Area Air Quality Management District (BAAQMD)
- Bay Conservation and Development Commission (BCDC)
- SF Bay Regional Water Quality Board

Much of the policy and technical direction for a land use/transportation program for regional goods movement would need to come from these agencies and their commissions and boards. The first three agencies above (MTC, ABAG, and BAAQMD) are working together on the Smart Growth strategy through the Joint Regional Agencies Coordinating Committee (RACC).

Thus far, MTC has led the study of goods movement, given its focus on the freight transportation system. However, as with the Smart Growth land use

strategy, MTC and ABAG could play lead roles in providing analysis, technical support, and direction for a regional goods movement land use strategy. BCDC could also have lead responsibilities because of its direct role in seaport and airport planning in the region. (Section IV identifies potential roles for regional plans and regulatory strategies in better integrating land use and transportation planning in support of regional goods movement.)

- Question of whether and how to integrate land use strategies for goods movement with those for Smart Growth

  Because of the substantial efforts already underway by the regional agencies to integrate land use and transportation planning to achieve Smart Growth objectives, there is the question of whether the land use objectives and programs for regional goods movement could or should become an element of the Smart Growth effort. The fact that there are different constituencies for goods movement, and that the Smart Growth effort has already been underway for several years may make it difficult to integrate the efforts at this point. Nevertheless, the regulatory and financial strategies recommended herein are similar to those involved in the Smart Growth effort and involve many of the same agencies, and there is overlap in that the Smart Growth strategy can affect goods movement, arguing for the integration of these efforts. The regional agencies should address whether and how to integrate the land use strategies for Smart Growth and regional goods movement.

Building Partnerships

Implementation of a comprehensive land use strategy as described in this paper would require building partnerships at several levels.

- Land Use and Transportation

  Land use and development patterns influence how well the surrounding transportation system functions. Analysis in Phase 1 identified land use issues affecting freight transportation in the region. To address these issues, this paper identifies key aspects of a regional land use strategy that would support efficient freight transportation in the Bay Area. The implementation of that strategy would require partnerships between governmental agencies involved in both land use and transportation planning and decision-making. While the focus of this strategy is on land use, there is a clear role for transportation agency support in partnership with land use agencies. The land use strategy includes roles for technical assistance and financial incentives from transportation agencies. Investments in transportation system improvements and projects also should be coordinated with supportive land use patterns and policies so as to achieve the desired outcomes.

- Intergovernmental Cooperation: Local and Regional Agencies

  Implementation of the land use strategy described herein would require participation by governmental agencies at the local and regional levels, including:

  - cities and counties;
  - airport and seaport authorities; and
  - regional agencies.

  Partnerships between the local governments who have land use authority and the regional agencies who would provide leadership, overall coordination, and financial support would be particularly important. As described earlier in this paper, a successful land use approach requires a regional strategy along with incentives for communities to implement the strategy at the local level.

  As outlined in Sections IV and V, the airport and seaport authorities could play an active role in the implementation of land use strategies oriented to providing locations for goods movement uses in proximity to the international gateway facilities. Partnerships in support of land use around the airports and seaports could involve the airport and seaport authorities, BCDC and MTC, and the local cities and counties.

- Public and Private Sector Roles

  Land use strategies focused on goods movement also would require public and private sector participation and partnerships. There are a number of challenges and barriers to be overcome as identified in Section I and addressed in other sections of this paper. While much of the responsibility for regulatory and financial aspects of the land use strategy focus on the public sector, there are other aspects of the strategy that would depend on private sector support and participation.

  Broad constituencies in favor of goods movement would be needed at the local and regional levels as described above. These could be led by business, labor, economic development, and international trade interests and organizations based largely in the private sector. Property owners in industrial districts and goods movement businesses also would be important players. With the help of public sector incentives and investments, property owners would need to commit to retaining land in freight-oriented industrial use and invest in facilities and improvements in industrial areas. Businesses would need to be responsible to the local community, operating in ways that minimize off-site impacts and addressing community concerns that may arise.

- Inter-regional Coordination: Bay Area and Adjacent Counties

  A part of the regional goods movement land use strategy would focus on inter-regional gateway corridors connecting the Bay Area with inland areas and the rest of the state and nation. The intent would be to identify locations for the concentration of freight-intensive land uses and truck support services along existing and potential future transportation corridors and to establish land use policies and supporting infrastructure that would facilitate development and expansion of such uses in those locations. Thus, planning for land use in support of the inter-regional gateways would extend beyond the nine-county Bay Area to include coordination and partnerships with inland counties including San Joaquin and Stanislaus counties to the east, Yolo and Sacramento counties to the northeast, and San Benito County to the southeast.

  Coordination among regions is already underway through the Inter-regional Partnership, made up of county and city representatives from Alameda, Contra Costa, San Joaquin, Santa Clara, and Stanislaus counties. This entity could provide a vehicle for addressing land use in support of the inter-regional gateway transportation corridors so as to facilitate efficient goods movement. Additional coordination with counties to the north along I-80 and to the south could also be done.

Raising Awareness and Visibility

Once decisions are made on the components of a regional goods movement land use strategy to be implemented and on the roles and responsibilities of involved parties, efforts would be needed to build support for the program and develop a broader understanding of what is to be accomplished and why it is needed.

- "Make the Case": Educate on the Purposes and Benefits of the Program

  To build support for a land use program for regional goods movement, it would be important to do the following:

  - Be clear on the reasons for action;
  - Identify the objectives of the program; and
  - Identify the benefits to be achieved.

  The regional agencies, private sector constituencies, and partnerships identified above would have to "make the case" for why a land use strategy for goods movement should be implemented. The message should be clear to local governments, other involved parties, and the broader public. An educational

effort is likely to be needed to raise awareness generally of the role of goods movement and its importance to businesses and residents of the region.

- Establish Visibility for the Program

  To establish visibility and build recognition for the program, it would be important to have a direct and memorable name or slogan. For example, the current "Smart Growth" vision and land use strategy has a name that conveys ideas and is easy to remember. Other examples include:

  - City of Boston's "Back Streets" program which includes components for land and space, workforce, business assistance, and resources and partnerships.

  - City of New York's "Zoning for Jobs: Making Space for New York's Working Economy"

  Potentially, the overall goods movement program would have a name or slogan that could be used as the basis for the name for the land use strategy component.

  Establishing visibility also could extend to the designation of key industrial districts for goods movement uses in the region. Local districts could be identified with signage that links them to the broader program to acknowledge their importance in the regional context, to recognize the efforts of local communities and property owners in support, and to reinforce local land use policies and zoning controls.

VIII. NEXT STEPS

After reviewing the land use strategy described herein, the Metropolitan Transportation Commission (MTC) and its partners for this *Regional Goods Movement Study*, the Economic Development Alliance for Business (EDAB) and the Port of Oakland (Port), could begin the process of articulating regional goods movement land use objectives, building support for implementation of a regional goods movement land use strategy, and undertaking initial steps for the implementation of that strategy. The following identifies the next steps that could be undertaken as an action agenda for the near-term future.

	Next Steps	Responsibility
1.	Review land use strategy identified herein. Commit to undertaking a goods movement land use strategy and agree on responsibilities in the short term. Identify a small, core group to coordinate upcoming tasks.	MTC, EDAB, Port
2.	Incorporate goods movement land use issues and objectives in the upcoming RTP - Transportation-Land Use Platform - Goods Movement Element	MTC
3.	Communicate regional goods movement land use issues, objectives, and strategy to other regional agencies including ABAG, BCDC, and BAAQMD. Seek to gain their support.	MTC lead
4.	Work with regional agencies to integrate goods movement land use objectives and strategy into regional land use policy and Smart Growth vision. Work through the Regional Agency Coordination Committee and Inter-regional Partnership.	MTC lead with EDAB and Bay Area Council
5.	Work with BCDC and the airport/seaport authorities to consider expanding the scope of regional airport and seaport plans to include land uses in key locations that are needed to support operations of the seaport and airport air cargo facilities.	MTC and Port
6.	Coordinate and organize constituency groups to advocate for goods movement land use objectives and strategies and undertake key roles in different parts of the region. Gain support and build constituencies with business, economic development, labor, and international trade interests and groups.	EDAB, Port, and Bay Area Council

	Next Steps	Responsibility
7.	Undertake process of identifying and mapping key locations for goods movement uses, or "goods movement districts", based on regional benefits for freight transportation and good potentials for longer-term viability in industrial use (see Section IV).	MTC lead with regional agencies, local governments, airport/seaport authorities, and private sector
8.	Support the development of easy-to-understand materials to highlight regional goods movement land use issues and objectives, for use in a broader campaign to build awareness at the local level (local jurisdictions, the public, local land use/transportation groups).	MTC, EDAB, and Port
9.	Establish ongoing coordinating group or committee for goods movement land use strategy, possibly as part of MTC Freight Advisory Committee or a similar group. Address funding for staff support.	MTC lead with EDAB, Port, and Bay Area Council

IX. OPERATIONAL ISSUES AND STRATEGIES

This section is intended to focus upon operational issues arising from conflict with goods movement operations. Solutions are offered to these conflicts by illustrating practices in other parts of the country that have successfully approached similar situations. The comprehensive land use strategy outlined in this report in Sections I-VIII address land use solutions toward this conflict while this section concentrates on operational and other non-land use-related conflicts and the solutions thereof.

The issues that are examined in this section emerge primarily from extensive focus group meetings held in Phase 1 of this study. The stakeholders comprised groups of trucking operators from both private and for-hire fleets, logistics managers and warehouse operators, and land use and transportation planners from public agencies. Three major issue areas emerged from these discussions which are discussed below.

Conflict Between Goods Movement-related Operations and the Community

The conflict between goods movement operations and the community manifest in the form of the competition for peak period movement (increasing peak congestion) between commuter and goods movement traffic and residential area restrictions on parking and operating hours.

Peak congestion as related to freight movement has been a problem in most major freight facilities, especially those located in major metropolitan areas of the country. Phase 1 analysis found that while all the major corridors (I-580, I-80, I-580, I-680 and U.S. 101) carry significant numbers of trucks, the intra-regional truck corridors, I-880 and U.S. 101 were highly congested: these corridors had most locations where the VOC Ratio was greater than or equal to one. The corridors support access to international trade facilities, domestic intermodal rail, and most truck-oriented businesses. The cost of this delay meant that the congestion, in conjunction with other pressures, had caused many carriers to start passing on the increase in costs to customers. All these corridors in addition to being commuter corridors are also the major truck routes and this conflict is very evident from the above description.

Adding to this, truck operators mentioned several examples of residential area restrictions that impacted their operations significantly. Among the problems faced were nighttime loading/ unloading restrictions, street reconfigurations that allowed inadequate geometric design for the operation of trucks, and restrictions on parking that overlap certain peak periods of demand. Inherent in these restrictions appeared to be the view of trucks as a nuisance.

Mitigation Strategies

- Change Truck Traffic Patterns

  Phase 1 showed that the reason for the congestion is that there was growing conflict between truck traffic patterns and commuter patterns. This situation could be alleviated by modifying business timings and the corresponding truck

traffic patterns to operate in off-peak hours. Unfortunately, while many carriers express willingness to move their operations to nighttime deliveries, there doesn't appear to be a corresponding response on the side of the businesses to operate during off-peak nighttime hours.

- Improve Public Perception of Freight

  Several cities around the country have started championing the freight needs and educating the public about the importance of goods movement in the economy. This has been through the estimation of innovative examples of calculating the benefits of investment in freight movement to the economy and through more direct educational initiatives such as the Puget Sound Regional Council-MPO for Seattle region's educational program called "If you got it a truck brought it" traveling roadshow.

- Communication Between Residential Communities and Truckers

  In order to facilitate operations, many cities have found that the institution of a dialogue between truckers and residential communities can improve the situation. The City of Portland's Freight Advisory Committee includes members of public and private operators who debate and reach agreements for safe and efficient movement of goods.

  The staff of the Chicago Department of Transportation work cooperatively with the owners and operators of industrial facilities in the City – warehouses, factories, and other facilities – to develop programs for loading and unloading that minimize truck idling and double-parking. Members of the City staff help facility operators optimize the times for receiving shipments in order to increase the efficiency and speed of each delivery. Compliance with the developed plans is purely voluntary – there are no existing regulations to enforce it.

Conflict Between Goods Movement Operations and Business Practices

The conflict between goods movement operations and business practices manifest in the form of restrictions on operating hours due to inadequate gate hours at the seaport, and the lack of truck parking around the busy commercial areas near the air and sea ports.

Truck operators in the Bay Area expressed frustration regarding operating restrictions at the Port. The spreading of the peak and constant congestion in areas around the Port of Oakland meant that the standard daytime operating hours were often overbooked and unavailable without waiting several hours. Additionally, trucks arriving early in the morning to get past the peak congestion often idle several hours in front of the gates causing air pollution and are often perceived as a nuisance.

The lack of truck parking in the core operation areas of the Bay Area was cited as a significant problem by most stakeholders. In particular, operators mentioned lack of parking in and around

areas near the Port of Oakland. This has meant that many truckers used local streets that are of inadequate geometry as rest and parking areas. Given the fact that vacant land near the Port has become a scarce and increasingly expensive commodity, the inadequacy of a rest stop and parking has translated into the perception of trucks as a nuisance when this spills onto adjacent streets not intended for this purpose.

Mitigation Strategies

- Extend Port Gate Hours and Institute Appointment System

  The extension of Port gate hours to 24/7 along with an appointment system would improve the situation. The Ports of LA and Long Beach are working on the evaluation of a system of gate hours that will allow for 24-hour operations. Several private companies presently operate online appointment systems for some of the terminals in the Port of Oakland.

- Gate Information System

  Information systems which communicate status of queues at highly congested areas are being found to be increasingly effective in alleviating congestion. The Port of New York and New Jersey's Freight Information Real-Time System for Transport (FIRST) system will provide cargo and equipment information in real-time on the Internet. The web page will integrate available information on ship, railroad, or plane arrivals, provide up-to-date cargo status and real-time road conditions, and provide real-time video, which monitors congestion at seaport entry gates or airport access points. A pilot project is being developed for the Southern Corridor in New Jersey. Application of such information systems can alleviate gate congestion and should be explored for applicability for the Port of Oakland.

- Facilitate Conversation Between Carriers and Businesses

  The institution of a platform for the truck operators and their clients (the businesses that they serve) to work out an off-peak system can facilitate this change in operating patterns. The realization that there is benefit for all parties, for the businesses in terms of reduced costs and the operators in terms of lower travel times and to the overall community in terms of reduced congestion would be adequate motivation for both parties to participate in such collaboration.

- Industrial Infrastructure and Designated Freight Districts

  Portland Metro (the MPO for the Portland region) has designated industrial infrastructure for future investment and upgrade. The City of Portland has also worked to develop land use designations in the form of designated freight districts that are areas in which freight movement is encouraged and infrastructure such as

parking is developed to facilitate truck operations. These land use strategies are discussed in detail in the land use section of this paper and can assist in satisfying parking and other infrastructural needs.

In Massachusetts, as part of the *Boston Back Streets Program*, sites that have convenient, fairly direct access to a highway or rail are prioritized for preservation for industrial uses. The City also provides some financial and technical resources as part of the program and fulfills the needs for parking infrastructure.

- Explore Alternative Parking Areas

  Many communities are exploring the use of alternative parking areas such as unused parking spaces in retail areas and the use of parallel arterial roads as parking and rest stop areas. In case of the usage of retail parking, this strategy may require the institution of incentives and dialogue between retail owners and carriers.

- Parking Standards

  Traditionally, parking standards for trucks have been ignored in the face of increasing residential development. Off-street parking for trucks are often left to the discretion of the business and the tendency of industry to ignore this need has meant that trucks park on streets. To counter this problem, Chicago has mandated the provision of one off-street loading-unloading truck space for 100,000 square feet of development for new development. This kind of a standard may be considered suitable to the Bay Area in light of the increasing development pressures.

- Parking Management Strategies

  Parking management programs can be utilized in congested areas near the Port to allow for the efficient use of available space. As an example, the City of Portland runs the Angled Parking Permit program – an example of a parking management strategy, which attempts to alleviate street blockage caused by loading/unloading trucks by providing operators with strategies to encourage better traffic flow. Permits are granted to allow an individual truck to park at a particular site. The program suggests various parking strategies to drivers, including anything from setting up cones to utilizing a flagger. The program is administered by the Office of Transportation.

Conflict Between Goods Movement Operations and Local Regulations

The conflict between movement of goods and local regulations manifest in the form of discontinuous and inadequate truck routes between jurisdictions, the weak enforcement of environmental and traffic regulations, and safety and security of cargo.

Focus group meetings held in Phase 1 of this study found complaints across the table regarding poor coordination of truck routes. Trucks traveling on a particular local street in a jurisdiction see abrupt changes in truck routes as they cross jurisdictions. Truckers complained that even within jurisdictions, sudden change in truck route designations were often made, which beside taking the trucking community by surprise, causing them to look for alternate route and waste precious time, often make it very difficult for truckers to conduct their business and access destinations.

Safety of cargo is an important concern that was raised by truck operators in the region. Increasing mixed-use development around the Bay Area especially near industrial uses was found to create truck-auto conflicts creating safety problems. Securing safe parking space was quoted as a very important concern for the truckers. A dialogue between the carriers and shippers to secure freight and goods moved and better law enforcement in such areas can be the answer to this concern.

Enforcement of traffic, safety, and emission standards has been a daunting task for administration officials. Truckers stressed the importance of enforcement so that in an increasingly competitive industry everyone bears the same costs and also to reduce the image of trucks as a nuisance. A resultant effect of inadequate enforcement of environmental standards has resulted in environmental pollution. Focus group meetings found several mentions of how trucks can be perceived in a negative light due to the pollution that they cause. A law passed to reduce diesel emissions at state ports has been in operation since 2002. The law requires maritime terminal operators to reduce truck wait lines at their gates to 30 minutes or less. In May 2004, this law was used for the first time to cite a Port of Oakland tenant that found three trucks waiting outside its gates. The specific problems with air pollution are discussed in detail as part of the Task 12 report of Phase 2 of this study, but some innovative strategies used across the country to counter this problem are discussed below.

Mitigation Strategies

- Subregional Coordination

  To overcome the problems in coordination among bordering jurisdictions to maintain continuity of truck routes, several states have taken the initiative in facilitating local coordination. Under Massachusetts law, a community must gain permission from MassHighway before restricting truck traffic along streets within the community. This affords MassHighway the overseeing authority to coordinate truck routes at the state level before granting permission.

  The City of Portland coordinates with the State of Oregon to issue permits for over-dimension, weight and size, trucks. This harmonization of city- and state-level permitting reduces the burden on trucking companies and encourages cooperation between industry and government. It is suggested that a similar tiered system of City-/County-/state-level coordination be organized on a regular basis to further this process.

- Solicit Industry Input

  In recognition of the lack of information about goods movement operations, several city and state authorities have found ways to communicate and incorporate their special needs while delineating truck routes. In Chicago, the Departments of Transportation and Planning and Development manage a program to identify and improve significant industrial corridors, including truck access. Each corridor has an appointed council comprised of both public and private interests which coordinate to facilitate the safe and efficient movement of goods through the corridor. This approach facilitates the dialogue between the private and public sector to work out a feasible solution that is likely to then be adhered to in the future.

  The City of Seattle has established the Office of Freight Facilitator which is responsible for developing a freight management plan for Seattle, identifying high-priority projects, communicating with the public on freight issues, and championing the needs of freight movement. This office participates in the design and review of projects that may impact freight movement in Seattle and interacts with other public agencies to champion the interests of freight movement.

- Information Dissemination

  The final step to the preparation of truck routes is to communicate the same to truckers to assist in the planning of their routes. In addition to improving operations and increasing efficiency, this communication has been found to increase compliance with the existing designations. The City of Portland has instituted a tiered system of truck routes with designations of regional, major, and minor truck routes. The routes are delineated by mode and are available on the Internet. The City of Portland has designated a committee, consisting of members from the business community as well as public agencies, to develop guidelines for freight movement in the City.

  The Port of Seattle (independent of the City of Seattle) makes a map of truck routes and truck restrictions available to all drivers traveling to and from the Port. The City of Seattle has an outreach program to publicize traffic regulation information for local companies that receive and generate truck shipments. The City maintains a list of companies and keeps them informed of policies and programs that are likely to impact them.

  New York City is considering implementing a web-based mapping tool to allow truck drivers to identify optimal routes with respect to size/weight characteristics and destination. This innovative approach has potential to improve compliance with local route designations.

- Innovative Technology to Reduce Impact

  Many cities have come up with innovative strategies to reduce the impact of truck traffic on residential communities. In New York, "noise walls" have been built around high truck traffic highways bordering residential communities to reduce noise due to large trucks. In Vancouver, the operation of "jake brakes" is strictly banned to reduce noise. Researchers and traffic engineers are experimenting with innovative pavement materials, designed to dampen the whining noise caused by the sound of tire meeting road. As trucks in urban environments rarely travel at speeds high enough to cause such a sound, other efforts are underway to control truck-generated noise on city streets. These include the stricter enforcement of noise ordinances – the use of a 'noise-cam' to track offending vehicles offers promise – and the installation of noise-dampening window insulation in neighborhoods with significant truck activity.

  Cities like New York have invested in technologically advanced applications to facilitate enforcement and increase compliance of commercial parking. The drivers of trucks and other commercial vehicles are required to pay a charge to use commercial parking spaces during the hours of 7:00 a.m. and 6:00 p.m. – $2 for one hour, $5 for two hours, and $9 for three hours. Three hours is the maximum time allowed. Businesses are able to purchase debit cards with memory chips for use by their drivers, eliminating the need to carry cash for use in the meters. The New York City Police have found enforcement to be much easier with this system than with a traditional system of meter-less loading zones, and the average time spent in a commercial spot has dropped to approximately 90 minutes from an average of five hours. In addition to this, there has been significant revenue generation. Initially, approximately $300,000 was invested in research, development, and purchasing; the revenue projection for 2005 is $10 million.

  New York State Department of Transportation recently used Federal transportation funding to install plug-in power sources for the hundreds of trucks that gather to load and unload at the Hunt's Point Cooperative Market. These power sources provide heat and light to the drivers and have dramatically reduced the number of trucks idling for power, thereby reducing the amount of exhaust in the area.

- Voluntary Incentive-based Compliance

  Inventive-based compliance strategies have been found to be more effective tools in enforcing regulations than penalties. An example of this application in the present context is that of Vancouver, where the management of overweight trucks is the most significant freight-oriented concern. To foster higher compliance with the Motor Vehicle/Commercial Transport Regulations and the municipal by-laws, city officials have focused on freight-oriented companies (both trucking companies and the companies hiring trucking companies). Vancouver has created

a list of approved trucking companies for municipal business and is developing a system that ties new construction permits, contracts, and agreements with requirements that trucks adhere to local regulations and by-laws. The trucking industry has also been closely involved with the development of the freight-oriented portions of the regional transportation plan prepared by Translink (the regional authority).

Los Angeles has found that the application of signalization, intersection, and striping solutions aimed towards improvement of truck movement and safety improves compliance with rules and regulations.

APPENDIX A

APPENDIX A

BACKGROUND ON REGIONAL LOCATIONS FOR GOODS MOVEMENT USES

Use of land use policy and zoning controls to designate and attempt to retain locations for freight-oriented industrial land uses begins with identifying important locations for goods movement uses within the region. Section IV of this paper describes an approach for identifying the key locations for goods movement businesses and services, based on regional benefits for freight transportation and good potentials for longer-term viability in industrial use. This appendix draws from the Phase 1 analysis to provide background on the locations within the region that are important for goods movement and that are candidates for designation as "key goods movement locations" to be retained for freight-oriented industrial uses in the future.

Industrial Locations in Central Areas Supporting International Gateways and Major Goods Movement Corridors

As identified in Phase 1, industrial space that houses goods movement businesses has been concentrated along the major transportation corridors that ring the central and southern parts of San Francisco Bay. Industrial locations in these areas are central within the region and offer proximity to the largest business and population centers in the region as well as to the region's major airports and seaports. Bay Area freight flows are concentrated along these corridors. Given the intensity of development and the strong demand for land in these areas, there is little opportunity to add to the existing supply of land for goods movement uses. Further, Bay Area growth trends and development patterns identified in Phase 1 will continue to increase development pressures in the central parts of the region in the future, reducing the availability of industrial land there and increasing the costs of the remaining industrial space.

The approach recommended herein is to focus on evaluating existing industrial areas in the central parts of the region, for the purpose of identifying those locations and areas that are important to regional goods movement and that possess attributes/characteristics that make them good candidates for longer-term viability in industrial use. These key locations/areas would then be the focus of *industrial protection strategies* seeking to retain their availability for freight-oriented land uses in the future. The existing industrial areas to be evaluated should broadly include land currently in warehouse, distribution, transportation, and similar uses, including former military bases in the central areas with industrial and goods movement uses/facilities. It is anticipated that the "key goods movement locations" to be identified for retention in central areas would be a short list of locations and areas currently in freight-oriented industrial use.

Data from the Phase 1 analysis is presented in Table A-1 and summarized graphically in Figure A-1 to highlight the concentrations of industrial space in markets supporting the international gateway facilities and major transportation corridors in the central parts of the region.

TABLE A-1
Industrial Space in Central Parts of the Bay Area
Supporting International Gateway Facilities
and Major Goods Movement Corridors

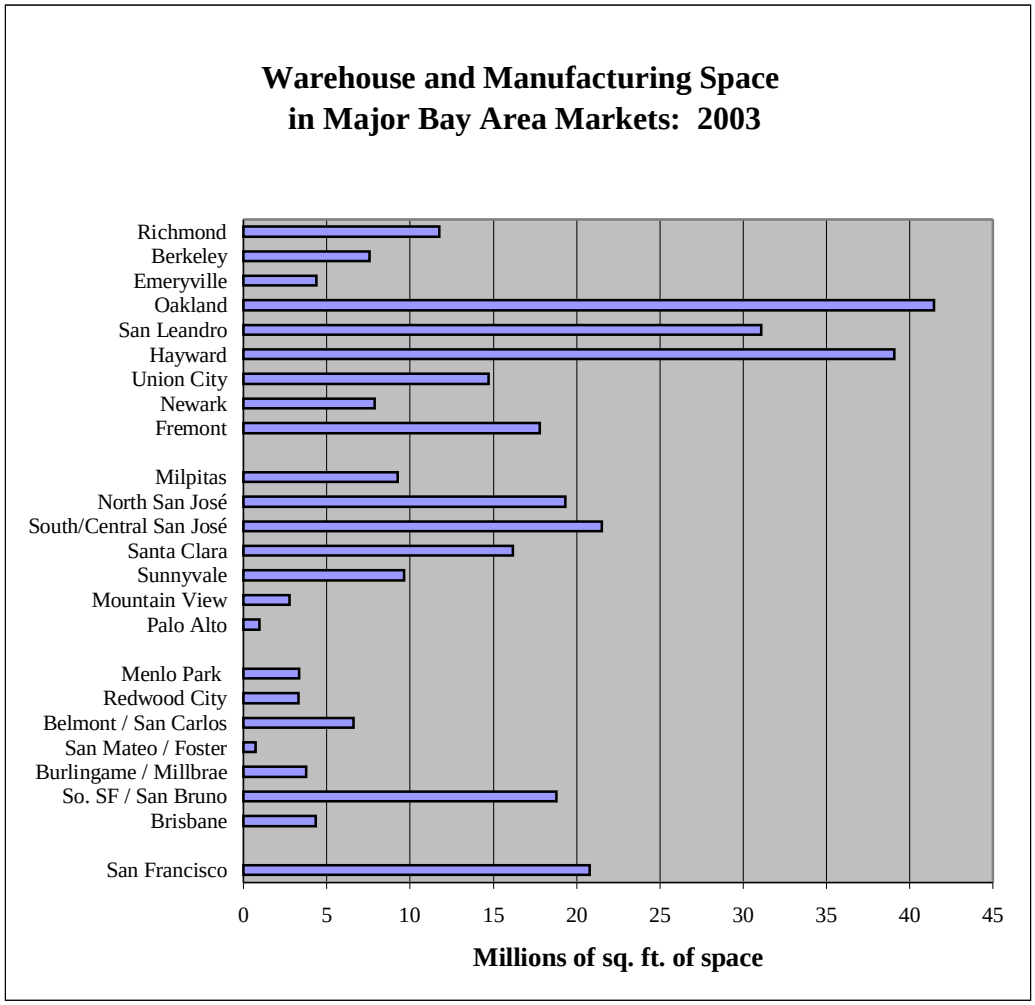
Corridors	**Int'l. Gateways**		Warehouse Space (Bldg. Sq. Ft.)	Manufacturing Space (Bldg. Sq. Ft.)
Inner East Bay I-80/880 Corridor				
Richmond	S		4,746,300	6,992,300
Berkeley			2,085,950	5,478,950
Emeryville			2,111,400	2,268,100
Oakland	S	A	15,646,400	25,809,000
San Leandro	S	A	16,193,700	14,875,800
Hayward	S	A	20,159,800	18,922,600
Union City			8,333,300	6,371,600
Newark			3,714,000	4,160,400
Fremont			8,598,600	9,187,100
South Bay I-880/U.S. 101 Corridors				
Milpitas			6,606,300	2,658,500
North San José			9,933,600	9,404,900
South/Central San José			8,876,300	12,646,100
Santa Clara			3,912,300	12,275,400
Sunnyvale			3,275,900	6,350,800
Mountain View			-	2,776,000
Palo Alto			-	968,700
Peninsula U.S. 101 Corridor				
Menlo Park			1,861,100	1,470,000
Redwood City			1,033,300	2,244,600
Belmont/San Carlos			3,398,100	3,193,700
San Mateo/Foster City			720,600	-
Burlingame/Millbrae		A	3,775,100	-
South San Francisco/San Bruno		A	18,780,100	-
Brisbane		A	4,336,900	-
San Francisco			20,775,600	-

KEY: S = proximity to major seaport facilities
A = proximity to major airport air freight facilities

NOTE: Also see the Task 4 Report from Phase 1 addressing "Existing Conditions and Trends Regarding Real Estate, Land Use and Community Factors With Implications for Goods Movement".

Source: BT Commercial Real Estate, Research Reports for First Quarter 2003; Hausrath Economics Group.

FIGURE A-1



I-880 Corridor and International Gateways

Currently, the major concentrations of warehouse and industrial space along the I-880 corridor in the Inner East Bay exist in Oakland, San Leandro, and Hayward, followed by concentrations to the south in Union City, Newark, and Fremont and in Milpitas and San José in the South Bay. There also is a concentration of warehouse and industrial space to the north in Richmond when the corridor is extended to include the portion of I-80 in the Inner East Bay. It can be noted that the largest industrial space markets along the I-880 corridor (Oakland, San Leandro, and Hayward) are located in proximity to two major international gateway facilities in the region, the Port of Oakland and Oakland International Airport.

U.S. 101 Corridor and International Gateways

An important concentration of warehouse and industrial space along the U.S. 101 Corridor exists in markets in South San Francisco/San Bruno, Brisbane, and Burlingame/Millbrae, in proximity to San Francisco International Airport. Other concentrations

exist at the northern end of the corridor in San Francisco and at the southern end in Sunnyvale, Santa Clara, and San José. The San José industrial markets are located at the southern ends of both the I-880 and U.S. 101 corridors and provide industrial support for the heart of Silicon Valley.

Outlying Industrial Locations Supporting Inter-regional Gateway Corridors

There also is a role for land use strategies and planning in support of the inter-regional gateway corridors connecting the Bay Area with the rest of the state and nation. The approach described herein focuses on the expansion of existing warehouse and distribution centers and the development of major new freight-oriented industrial areas for goods movement uses in outlying parts of the Bay Area and beyond. The intent would be to identify locations for the concentration of freight-intensive land uses and truck-related services in support of existing and potential future inland transportation corridors and to plan for land use policies and supporting infrastructure that would facilitate development and expansion of such uses in those locations. The intent is similar to that of the concept of freight villages, an approach to freight land uses that has been used in European countries and aspects of which have been developed in the U.S. Land use planning in coordination with transportation system planning could result in a more efficient inter-regional freight transportation system in the future.

In addition to the focus on new development in peripheral areas, there also could be the need for strategies to retain locations for goods movement land uses along existing inter-regional corridors, such as the I-80 corridor in Solano County, as growth and the intensification of development continues there in the future.

As identified in the Phase 1 analysis, goods movement over the inter-regional corridors will increase.

- **I-580.** Connections via I-580 to the east will become increasingly important as the region continues to expand outward and large-scale, major distribution facilities serving the Bay Area continue to expand in San Joaquin County locations with large land areas and access to I-5. Land use and infrastructure planning will be important to facilitate continued operation and expansion of the types of large-scale warehouse and distribution facilities developing there.

- **Future New Inland Routes.** The planning for new inter-regional connections presents an opportunity to address land use needs and development potentials for new industrial and truck-support areas for goods movement uses in support of the new transportation facilities and routes. Possibilities include SR 152 as a potential reliever route for I-580, that would connect southern Santa Clara County with Stanislaus County and San Benito County. Other possibilities include improvements to SR 4 and SR 84 to provide better connections between I-680 in eastern Contra Costa County and San Joaquin County and I-5.

- **Alternative Mode Improvements** also are being considered, such as CIRIS, to provide shippers with a rail alternative to divert some of the freight traffic from the interstates. The routes and terminals for such improvements could support additional freight-oriented land uses in new areas.

- **I-80.** The I-80 corridor through Solano County provides connections north to the Sacramento region and points further north and east. Goods movement businesses are located along the corridor as are truck-related service uses. This corridor will continue to intensify and urbanize in the future. Land use issues related to goods movement in this corridor are likely to focus on expansion and retention of truck-related service uses along the corridor, as well as land use policies in support of warehouse, distribution, and manufacturing uses in areas along the route.

Industrial space in markets supporting the current inter-regional gateway corridors is summarized from the Phase 1 analysis in Table A-2. Evaluation of locations important for goods movement would focus on these areas as well as areas in the vicinity of future new inter-regional routes inland.

Regional Overview of Industrial Locations for Goods Movement Uses

The map in Figure A-2 provides an overview of existing locations with industrial land uses throughout the region, based on data from the Association of Bay Area Governments (ABAG). Figures A-3 and A-4 provide larger-scale versions of the map focusing on the central parts of the region around the international gateways and the major I-880 and U.S. 101 corridors. The maps show that most industrial uses are located along the major highway corridors of the region. They also show the locations of industrial uses in proximity to the major airports and seaport.

The maps are based on *land area* in industrial use, not industrial building space.[1] Thus, the maps do not reflect differences in densities or intensities of use among locations in central areas and those in more outlying parts of the region. The data in Tables A-1 and A-2 more accurately reflect amounts of industrial space and business activity for jurisdictions, while the maps in Figures A-2, A-3, and A-4 depict the approximate locations of that space within those jurisdictions.

The industrial areas shown on the maps are *approximate*, and *not all* industrial locations are shown. In particular, the data do not always identify industrial uses in older areas with a mix of uses in close proximity. Further, the large scale of the regional maps does not always show smaller industrial sites and areas. As a result of these difficulties, the maps do not include some industrial uses in San Francisco and Oakland, in particular, as well as in other older, center city areas.

[1] The ABAG land use categories used to define land in "industrial use" as shown on the maps include the following: heavy industrial, light industrial, metal salvage and recycling, food processing, and warehousing. The mapping includes total land area with associated parking lots and grounds. In some cases, city *General Plan* land use designations for industrial use supplemented the ABAG land use data.

TABLE A-2
Industrial Space in Locations Supporting
Inter-regional Gateway Corridors for Goods Movement

Corridors	Warehouse Space (Bldg. Sq. Ft.)	Manufacturing Space (Bldg. Sq. Ft.)
Napa/Solano I-80/780/680 Corridor /a/		
Benicia	6,469,800	1,875,200
Vallejo	189,300	69,250
Napa	6,501,500	807,850
Cordelia/Fairfield/Suisun	6,454,100	1,301,100
Vacaville	5,872,600	445,800
Tri-Valley I-580 Corridor /b/		
Pleasanton	2,614,000	-
Dublin/San Ramon	2,627,100	-
Livermore	6,459,700	4,271,100
San Joaquin Co. I-580/I-5 Gateway /c/		
Tracy	12,775,800	-
Manteca	3,438,200	-
Lathrop	8,277,600	-
Stockton	50,247,600	-
Lodi	9,423,700	-

/a/ Cushman & Wakefield of Northern California, Napa/Solano market reports and inventories, First Quarter 2004 and June 2004.
/b/ CB Richard Ellis, Industrial Market Reports for First Quarter 2003. Also see Tables 2 and 3 of Task 4 Report from Phase 1.
/c/ CB Richard Ellis, Inc., Industrial Market Survey of Warehouse Space, 9/22/03, as available from the San Joaquin Partnership.

Overview of Regional Locations for Goods Movement Uses

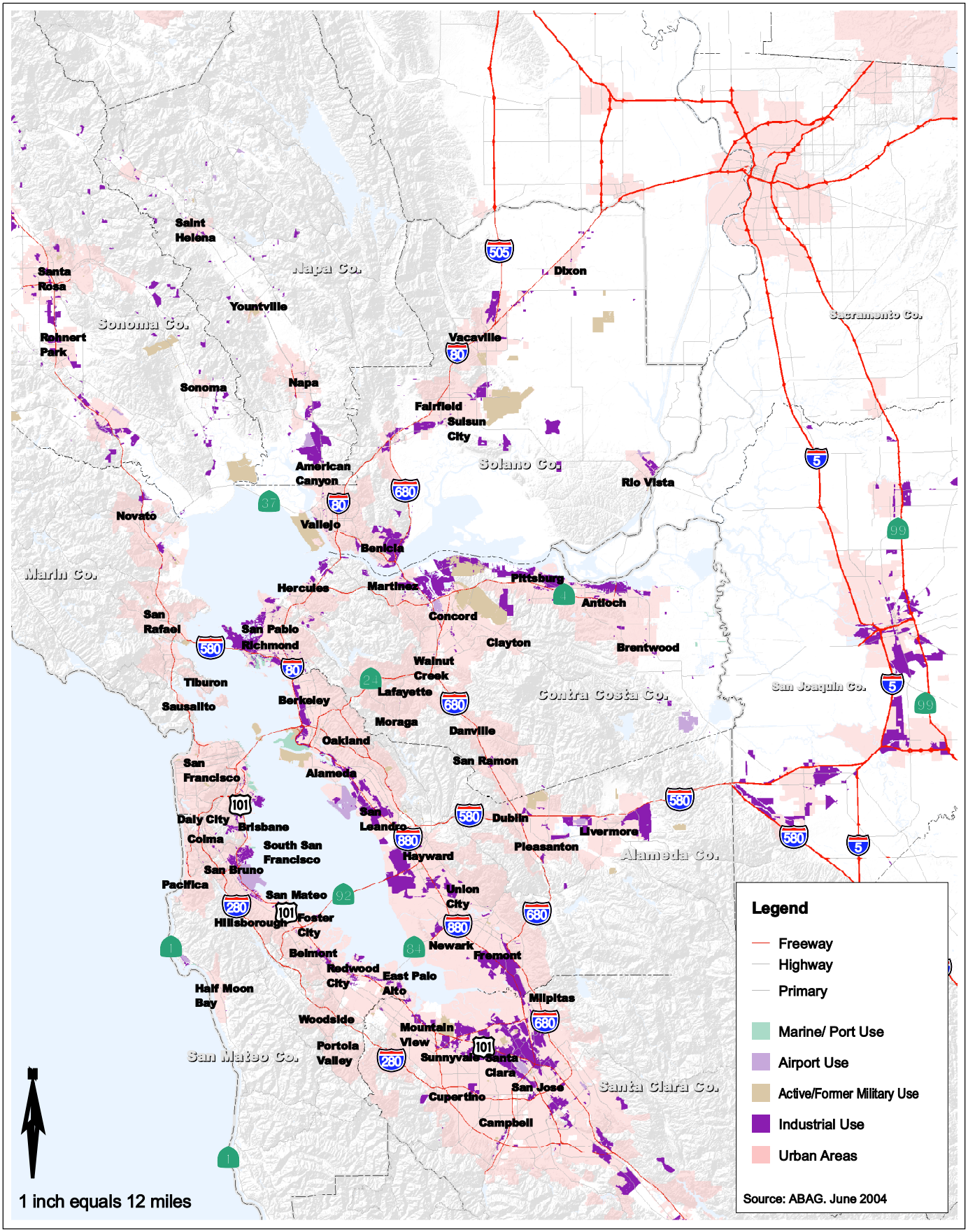


Figure A-2

Central Area Locations Supporting Seaport/Airports and I-880/U.S. 101 Goods Movement Corridors

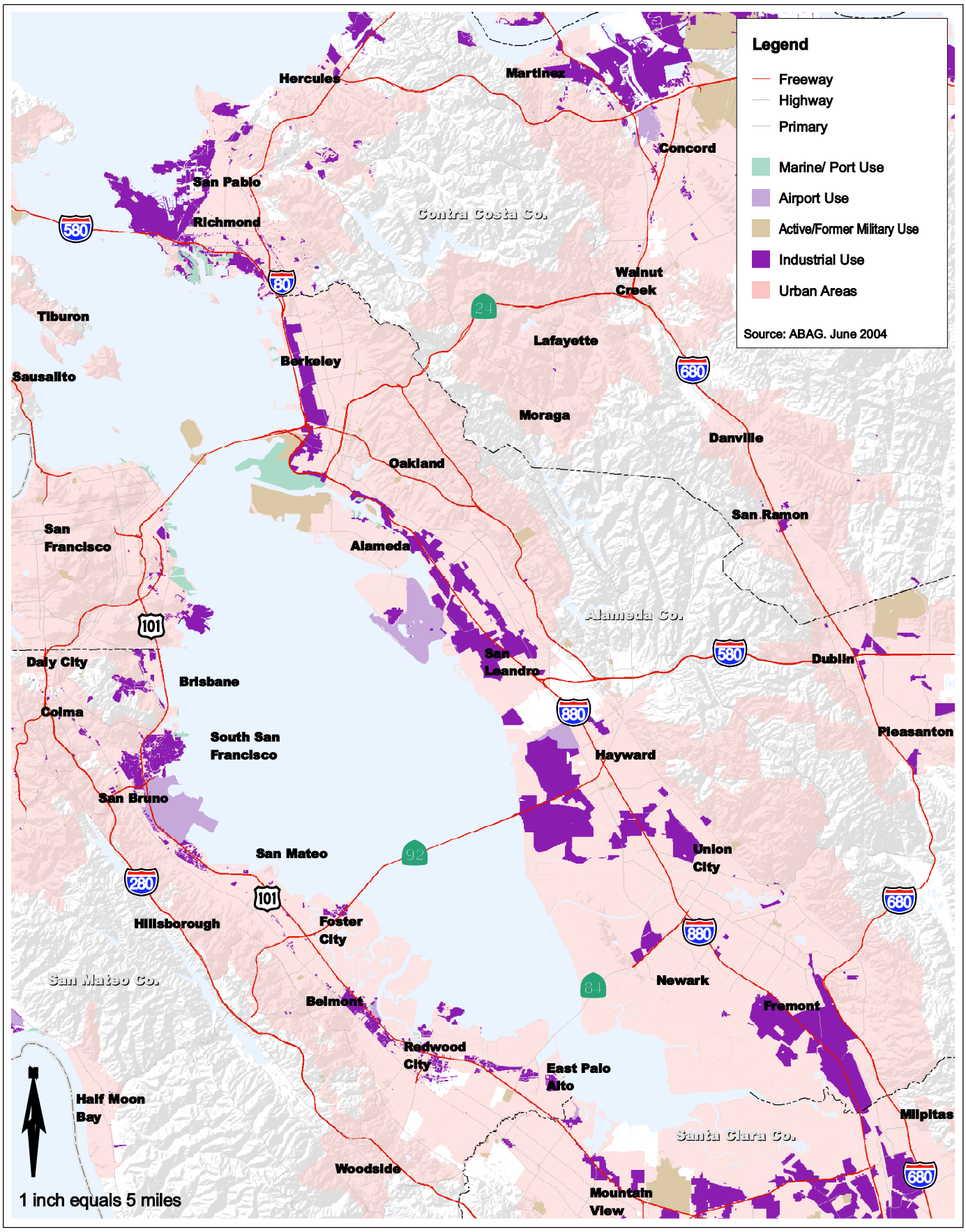


Figure A-3

Goods Movement Locations in South Bay I-880/ U.S. 101 Corridors

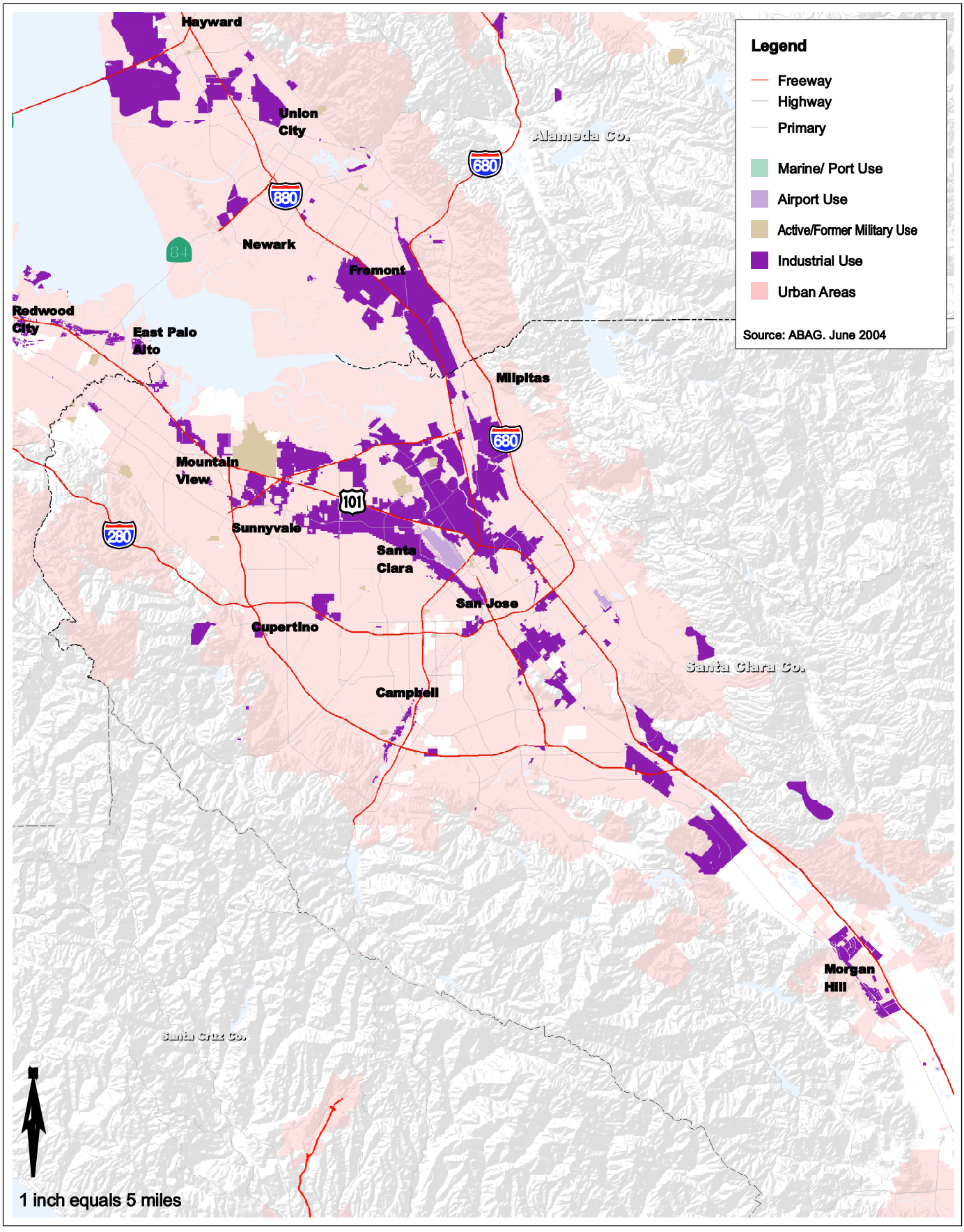


Figure A-4